

**JOURNAL**  
**OF THE**  
**American Veterinary Medical Association**  
**FORMERLY AMERICAN VETERINARY REVIEW**

(Original Official Organ U. S. Vet. Med. Ass'n.)

H. Preston Hoskins, Secretary-Editor, 537 Book Building, Detroit, Mich.

T. H. FERGUSON, President, Lake Geneva, Wis.      M. JACOB, Treasurer, Knoxville, Tenn.

**Executive Board**

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C. A. CARY, 4th District; C. H. STANGE, Chairman, 5th District;

Geo. H. HART, 6th District; R. S. MACKELLAR, Member-at-Large.

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**WHY INCREASE THE DUES?**

Before considering an increase in the annual dues in the A. V. M. A., we should fix in our minds the fact (which is not generally known) that these dues are two dollars a year. Three dollars of the five which we now pay is definitely set aside for the JOURNAL. The postal regulations require that this be done. The discussion concerning the increase in dues refers, therefore, to the *two* dollars, which is the amount set aside for the Association's activities. With this it is necessary to maintain the Secretary's office and provide the necessary clerical assistance, conduct the annual conventions, and take care of the constantly increasing and tremendously important work of our several committees.

The Committee on Budget each year finds it necessary to reduce the appropriations requested by some of the committees doing important work for the veterinary profession. Our committees are greatly reduced in efficiency, because they have no funds appropriated for their work. For several years it has been a question of postponing activities of the A. V. M. A. because they could not be financed from our present dues of two dollars per year. Rather than cripple all of our activities, it has been considered better policy to restrict our activities and do well what is done. It has not been the policy of the Executive Board to pay the expenses of members of the several committees to the annual

meetings. It is only when the work of a committee requires travel, or other expenses aside from the annual meeting, that such expenses have been approved.

An assistant to the Secretary is very much needed, not only because of the increasing demands on the office, but also because we need some one to do educational and contact work for the profession. Fortunately our Secretary-Editor has not had illness to incapacitate him and the Executive Board is well aware of the unfortunate situation our Association would be in should illness or accident necessitate any prolonged absence on the part of the Secretary from his work. Until funds are available, however, your Executive Board can do little with this problem.

In addition to the accounts with about 4500 members, there are twenty-seven committees and sections, five representatives to other organizations, sixty-four resident state and provincial secretaries, and twelve foreign secretaries, in addition to some special committees with whom the Secretary must keep in touch.

Prior to employing a full-time Secretary-Editor and establishing our own offices, the cost per year for each member was \$2.01 and our annual dues were \$3.00. Since that time the work of the Association has greatly increased in several directions and our annual dues were decreased from \$3.00 to \$2.00 per year, incidental to acquiring the JOURNAL. The average cost of the increased activities is 46 cents per member per year and it is only because we have had a reserve fund that we have been able to continue. In order to provide sufficient funds reasonably to care for the work the Association is doing at present, and provide for some of the activities very much needed for the future of the veterinary profession in North America, we should provide at least \$4.00 in annual dues for all the activities exclusive of the JOURNAL.

The Treasurer's report for the calendar year 1929 shows that our receipts in the Association Fund (not including the JOURNAL revenue) were \$8,893.65, while our expenses were \$11,253.07. We are expecting more and more of our officers and committees and it is perfectly proper to ask the A. V. M. A. to perform a service to the profession which is constantly increasing in scope and significance. Our officers and committees can go only as far as the funds we provide will permit them.

The quality of our JOURNAL cannot be duplicated anywhere for the same price. Much of the work of the officers and committees is done quietly, but effectively, and is worth many times

what it has cost us, but there is much more that can and should be done. The dues should be increased, so that these possibilities may become realities.

C. H. S.

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### **PRESIDENT FERGUSON TO ATTEND SUMMER MEETINGS**

President Ferguson is scheduled to attend the summer meetings of six state associations during June and July. This month will see him at Charlotte, North Carolina, where the two Carolina associations will hold a joint meeting, June 17-18-19. The following week Dr. Ferguson will be at East Lansing, for the annual meeting of the Michigan State Veterinary Medical Association.

The second week in July will find our chief executive in Minnesota and North Dakota. The Gopher veterinarians will gather at University Farm, July 8 and 9, for a combined short course and semi-annual meeting of the Minnesota State Veterinary Medical Society. From St. Paul, Dr. Ferguson will go to Fargo, for the summer meeting of the North Dakota Veterinary Medical Association, July 10 and 11. The following week he will attend the meeting of his own state association.

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### **EXECUTIVE BOARD ELECTIONS**

The large number of ballots being cast in the Executive Board elections being held in five districts may be taken as an index of the interest being shown in these elections. In the primaries the voting was not so heavy. This is usually the case, as the absence of any names on the nomination ballots undoubtedly results in many members failing to exercise their franchise. They have not heard of anybody "running" and they simply do not vote. This phase of our Executive Board elections is reflected further in the number of candidates who receive only one vote. In the present elections there were 136 members whose names appeared on the nomination ballots, and of this number there were 81 who received but one vote.

There were quite a few ballots which were declared void by the tellers, for one reason or another. In several instances the nominees were not members of the A. V. M. A. In other cases the member nominated was not located in the same district as the member voting. Quite a number of blank ballots were

returned, and in other cases the name was incomplete (no initials) or so badly misspelled as to leave the intention of the voter in doubt.

The canvass of the ballots on April 26 revealed one tie for fifth place—in District No. 9—necessitating placing six nominees on the ballot for this district (New York and the New England States). One nominee—Dr. C. H. Stange—withdrew as a candidate in District No. 5. The polls for the elections will be closed on June 26. Following are the nominees:

#### DISTRICT NUMBER 5

COTTON, C. E. Minneapolis, Minn.  
Secretary and Executive Officer, Minnesota State Live Stock Sanitary Board. Graduate of University of Pennsylvania, 1893. Joined A. V. M. A., 1898. President, 1916-1917; member of Executive Board, 1920-1925.

COVAULT, C. H. Ames, Iowa  
Associate Professor of Veterinary Medicine, Iowa State College. Graduate of Ohio State University, 1911. Joined A. V. M. A., 1918.

FITCH, C. P. St. Paul, Minn.  
Chief, Division of Veterinary Medicine, University of Minnesota. Graduate of New York State Veterinary College, Cornell University, 1911. Joined A. V. M. A., 1912. Resident secretary for Minnesota, 1918-1919; member (1924-1925; 1927-1928), chairman (1919-1924; 1928—), of Committee on Abortion.

GLENN, J. C. Norway, Iowa  
Practitioner. Graduate of Chicago Veterinary College, 1907. Joined A. V. M. A., 1918.

TOTTEN, G. E. South St. Paul, Minn.  
B. A. I. Inspector-in-Charge, South St. Paul. Graduate of Chicago Veterinary College, 1898. Joined A. V. M. A., 1913.

#### DISTRICT NUMBER 7

CREWE, W. F. Bismarck, N. D.  
State Veterinarian of North Dakota. Graduate of Ontario Veterinary College, 1891. Joined A. V. M. A., 1893. Resident secretary for North Dakota, 1902-1903; 1910-1915; and 1921-1922; member of Committee on Resolutions, 1926-1929.

HAYS, C. H. Lincoln, Nebr.  
State Veterinarian of Nebraska. Graduate of Ohio State University, 1908. Joined A. V. M. A. 1916.

SCHALK, A. F. Fargo, N. D.  
Professor of Veterinary Science, North Dakota Agricultural College. Graduate of Ohio State University, 1908. Joined A. V. M. A., 1911. Member of Committee on Prevention of Transmissible Diseases of Animals, 1922-1924; resident secretary for North Dakota, 1927—; member of Committee on Tuberculosis, 1928-1929.



SIMMS, B. T.

Corvallis, Ore.

Professor of Veterinary Science, Oregon Agricultural College. Graduate of Alabama Polytechnic Institute, 1911. Joined A. V. M. A., 1912. Resident secretary for Oregon, 1916-1924; member (1919-1929,) chairman, (1923-1924 and 1928-1929), of Committee on Intelligence and Education; chairman of Committee on Resolutions, 1928—.

WEGNER, E. E.

Pullman, Wash.

Dean, College of Veterinary Medicine, State College of Washington. Graduate of State College of Washington, 1908. Joined A. V. M. A., 1913. First vice-president, 1925-1926; member of Committee on Resolutions, 1929—.

## DISTRICT NUMBER 8

BOWER, CHARLES W.

Topeka, Kans.

Practitioner. Graduate of Kansas State Veterinary College, 1918. Joined A. V. M. A., 1918. Resident secretary for Kansas, 1927-1928; chairman of Section on Small Animals, 1928—.

BURT, J. H.

Manhattan, Kans.

Professor of Anatomy and Physiology, Kansas State Agricultural College. Graduate of Ontario Veterinary College, 1895, and Ohio State University, 1905. Joined A. V. M. A., 1912.

DYKSTRA, R. R.

Manhattan, Kans.

Dean, Division of Veterinary Medicine, Kansas State Agricultural College. Graduate of Iowa State College, 1905. Joined A. V. M. A., 1912. Member of Committee on Necrology, 1919-1920 and 1920-1923; member of Committee on Resolutions, 1924-1926.

KINSLEY, A. T.

Kansas City, Mo.

Pathologist. Graduate of Kansas City Veterinary College, 1904. Joined A. V. M. A., 1904. Fourth vice-president, 1910-1911; president, 1921-1922; member-at-large of Executive Board, 1917-1921; member of Committee on Diseases, 1908-1909, 1910-1911, 1912-1913 and 1915-1916; member of Committee on Intelligence and Education, 1911-1912; member of Committee on Legislation, 1916-1917; member of Committee on Prevention of Transmissible Diseases of Animals, 1925-1926.

WILLIAMS, N. F.

Fort Worth, Texas

State Veterinarian of Texas. Graduate of Kansas City Veterinary College, 1911. Joined A. V. M. A., 1917. Secretary of Section on Sanitary Science and Police, 1925-1926; member of Committee on Resolutions, 1926-1927; resident secretary for Texas, 1928—.

## DISTRICT NUMBER 9

ARMSTRONG, J. M.

East Providence, R. I.

Practitioner. Graduate of Harvard University, 1896. Joined A. V. M. A., 1899.

EICHHORN, ADOLPH

Pearl River, N. Y.

Director, Veterinary Department, Lederle Laboratories, Inc., Pearl River, N. Y. Graduate of New York-American Veterinary College, 1900. Joined A. V. M. A., 1901. Vice-president, 1913-1916 and 1918-1920.

**HOLLINGWORTH, W. G.**

Utica, N. Y.

Chief Veterinarian, Bureau of Health, Utica, N. Y. Graduate of American Veterinary College, 1884. Joined A. V. M. A., 1885. Member of Committee on Legislation, 1913-1916; member of Committee on Resolutions, 1916-1917; resident secretary for New York, 1918-1919; member of Committee on Necrology, 1926-1927; fifth vice-president, 1928-1929.

**JAKEMAN, H. W.**

Boston, Mass.

In charge, New England Branch, Pitman-Moore Co. Graduate of University of Pennsylvania, 1909. Joined A. V. M. A., 1911. Resident secretary for Massachusetts, 1924—; secretary of Massachusetts Veterinary Association.

**UDALL, D. H.**

Ithaca, N. Y.

Professor of Veterinary Medicine and Hygiene, Cornell University. Graduate of New York State Veterinary College, Cornell University, 1901. Joined A. V. M. A., 1913. Member (1923-1927), chairman (1927-1928) of Committee on Intelligence and Education.

**WILLS, J. G.**

Albany, N. Y.

Veterinarian, Department of Farms and Markets. Graduate of New York State Veterinary College, Cornell University, 1906. Joined A. V. M. A., 1909. Chairman of Section on Sanitary Science and Police, 1916-1918.

**DISTRICT NUMBER 10****AXBY, W. A.**

Harrison, Ohio

Practitioner. Graduate of Ohio Veterinary College, 1895, and Cincinnati Veterinary College, 1905. Joined A. V. M. A., 1907. Member of Committee on Intelligence and Education, 1927-1928.

**BRUMLEY, O. V.**

Columbus, Ohio

Dean, College of Veterinary Medicine, Ohio State University. Graduate of Ohio State University, 1897. Joined A. V. M. A., 1919. Member (1920-1921), chairman (1926-1927) of Committee on Necrology; member of Committee on History, 1923-1925; member of Committee on Schmidt Memorial, 1927-1928, member of Committee on Distemper, 1929—.

**GILTNER, WARD**

East Lansing, Mich.

Dean of Veterinary Medicine, Michigan State College. Graduate of New York State Veterinary College, Cornell University, 1906. Joined A. V. M. A., 1907. Representative to the National Research Council, 1924-1927, representative to the American Association for the Advancement of Science, 1928—.

**HILTY, REUBEN**

Toledo, Ohio

Practitioner. Graduate of Ohio State University, 1907. Joined A. V. M. A., 1908, resident secretary for Ohio, 1924-1925, president, 1927-1928, member of the Committee on Education, 1928—.

**KILLHAM, B. J.**

East Lansing, Mich.

Extension Specialist in Animal Diseases, Michigan State College. Graduate of McKillip Veterinary College, 1912. Joined A. V. M. A., 1917. Resident secretary for Michigan, 1921-22; 1924-1927; member of Committee on Veterinary Biological Products, 1929—.

### Railroad Fares to Los Angeles

Below are given the round-trip, summer excursion fares from various points in the United States and Canada to Los Angeles via direct route which includes San Francisco. If members going to the Los Angeles convention desire to include Portland, Ore., and Seattle, Wash., in their itineraries, the fares will be approximately \$18.00 higher in each case. Tickets carry a final return limit of October 31 and permit stopovers.

	Fare (round trip)	Lower Berth (one way)
Atlanta, Georgia.....	\$108.25	\$24.38
Boston, Massachusetts.....	147.66	33.38
Buffalo, New York.....	116.10	28.88
Chicago, Illinois.....	90.30	23.63
Cincinnati, Ohio.....	101.35	26.25
Cleveland, Ohio.....	105.65	27.00
Denver, Colorado.....	67.20	16.50
Detroit, Michigan.....	101.70	27.00
Fort Worth, Texas.....	75.60	19.13
Kansas City, Missouri.....	75.60	19.88
New Orleans, Louisiana.....	89.40	21.00
New York, New York.....	138.32	32.63
Omaha, Nebraska.....	75.60	19.88
Ottawa, Ontario.....	131.20	31.88
Philadelphia, Pennsylvania.....	133.14	31.50
Saint Louis, Missouri.....	85.60	22.50
Saint Paul or Minneapolis, Minnesota.....	91.90	23.63
Salt Lake City, Utah.....	40.00	9.00
Seattle, Washington.....	65.30	14.25
Washington, D. C.....	130.45	31.50
Winnipeg, Manitoba.....	130.00	26.25

The California State Fair opens the week following the Los Angeles convention. Members may spend a very enjoyable week looking over the agricultural and live stock products of California, before starting on the return trip. Dr. L. M. Hurt, chairman of the Local Committee on Arrangements advises that there will also be an opportunity to see some good races.

### APPLICATIONS FOR MEMBERSHIP

(See January, 1930, JOURNAL)

#### FIRST LISTING

- BOLSTAD, SALMAR PAUL 680 12th Ave., Milwaukee, Wis.  
D. V. M., Kansas City Veterinary College, 1912  
Vouchers: A. E. Behnke and T. H. Ferguson.
- CRILEY, BEN R. Box 477, Pearl River, N. Y.  
D. V. M., Iowa State College, 1928  
Vouchers: B. M. Lyon and Adolph Eichhorn
- DAVIS, WILLIAM L. 821 West 23rd St., Pine Bluff, Ark.  
D. V. S., Kansas City Veterinary College, 1910  
Vouchers: Joe H. Bux and W. C. Glockner.

- DIGMAN, ROBERT JOHN 519 Wentworth Ave., Milwaukee, Wis.  
M. D. C., Chicago Veterinary College, 1908  
Vouchers: A. E. Behnke and T. H. Ferguson.
- DIXON, CAPT. ONESS H., JR. Iowa State College, Ames, Iowa.  
D. V. M., Iowa State College, 1915  
Vouchers: W. A. Aitken and Geo. R. Fowler.
- FISHBACK, HOWARD B. 410 Grove St., Ft. Atkinson, Wis.  
D. V. M., McKillip Veterinary College, 1917  
Vouchers: T. H. Ferguson and A. E. Behnke.
- GEGAX, CHARLES LEROY 1888 Kinnic Kinnic, Milwaukee, Wis.  
D. V. M., Grand Rapids Veterinary College, 1918  
Vouchers: A. E. Behnke and T. H. Ferguson.
- GETZ, ROBERT L. Harrisonburg, Va.  
D. V. M., United States College of Veterinary Surgeons, 1917  
Vouchers: H. C. Givens and H. S. Miller.
- HOBBS, HARRY H. 90 13th St., Milwaukee, Wis.  
M. D. C., Chicago Veterinary College, 1911  
Vouchers: A. E. Behnke and T. H. Ferguson.
- HYDE, WALTER W. Wellington, Ohio.  
D. V. M., Grand Rapids Veterinary College, 1912  
Vouchers: A. J. DeFosset and C. McCandless.
- JANKE, GEORGE CHARLES 271 Washington St., Wauwatosa, Wis.  
D. V. M., McKillip Veterinary College, 1918  
Vouchers: T. H. Ferguson and A. E. Behnke.
- KERNOHAN, GEORGE 518 Keokuk St., Petaluma, Calif.  
D. V. M., Kansas State Agricultural College, 1912  
Vouchers: W. R. Hinshaw and E. E. Jones.
- KNOERNSCHILD, HERBERT W. 332 Federal Bldg., Lincoln, Nebr.  
D. V. M., McKillip Veterinary College, 1914  
Vouchers: A. H. Francis and Neil Plank.
- MOELLER, JOSEPH R. R. 8, Mt. Washington, Ohio.  
D. V. M., Ohio State University, 1920  
Vouchers: A. J. DeFosset and C. McCandless.
- MYERS, JOHN L. 142 12th Ave. N., South St. Paul, Minn.  
D. V. M., Colorado Agricultural College, 1924  
Vouchers: M. E. Schwab and G. E. Tottan.
- NEFF, SAMUEL C. Staunton, Va.  
V. S., Ontario Veterinary College, 1901  
Vouchers: H. C. Givens and R. E. Brookbank.
- RICHARDSON, JOHN GODDARD 1338 Broad St., Providence, R. I.  
D. V. S., American Veterinary College, 1896  
Vouchers: J. M. Armstrong and J. S. Barber.
- SMITH, WILLIAM C 1273 40th St., Milwaukee, Wis.  
D. V. M., McKillip Veterinary College, 1918  
Vouchers: A. E. Behnke and T. H. Ferguson.
- SWALBERG, RALPH CLEMENT Box 214, Spanish Fork, Utah  
D. V. M., Kansas City Veterinary College, 1915  
Vouchers: N. C. Spalding and A. T. Kinsley.
- TOWNSEND, JAY GRIFFITH 6701 Malabar St., Huntington Pk., Calif.  
D. V. M., Cornell University, 1919  
Vouchers: E. E. Jones and R. H. Schofield.
- VARNUM, SAMUEL CHANDLER 724 Plankinton Ave., Cudahy, Wis.  
D. V. M., Kansas City Veterinary College, 1917  
Vouchers: A. E. Behnke and F. D. Meier.
- VERDUIN, FRANCIS J. 430 Van Norman Ave., Cudahy, Wis.  
M. D. V., McKillip Veterinary College, 1906  
Vouchers: A. E. Behnke and T. H. Ferguson.

WALTERS, EZRA JOSEPH

200 Maple St., Wyandotte, Mich.

D. V. S., Grand Rapids Veterinary College, 1906

Vouchers: H. Preston Hoskins and E. E. Patterson.

**Applications Pending**

## SECOND LISTING

Anchondo, Salvador Velezquez, Calle 7a No. 67, Apt. postal No. 45, Metamoros, Tamps, Mexico.

Baker, Leslie Heite, 207 Livestock Exch. Bldg., Ft. Worth, Texas.

Cooper, Clarence John, Kelton, Pembroke, Bermuda.

Globus, Robert, 758 Boswell Ave., Norwich, Conn.

Gunn, Wallace Raymond, Live Stock Branch, Dept. of Agri., Victoria, B. C.

Hill, Vernon B., Nevada, Mo.

Jasmin, Joseph Sylvio, 12361 Chevelier St., Montreal, Que.

Juday, Guy Carlton, 5545 S. Peoria St., Chicago, Ill.

Mason, Talmadge Scott, Helena, Ark.

Milke, George Emil, Medford, Wis.

Mills, James Thomas, Hot Springs, Ark.

Steffen, Mart. R., 1220 Madison Ave., Indianapolis, Ind.

Sullivan, Edward Joseph, Georgiaville, R. I.

Taylor, Otha R., Toll Gate, W. Va.

The amount which should accompany an application filed this month is \$7.91 which covers membership fee and dues to January 1, 1931, including subscription to the JOURNAL.

**COMING VETERINARY MEETINGS**

Eastern States Conference on Tuberculosis and Other Animal Diseases. Chancellors Hall, State Education Bldg., Albany, N. Y. June 3-5, 1930. Dr. E. T. Faulder, Bureau of Animal Industry, 19th Floor, State Office Bldg., Albany, N. Y.

New York City, Veterinary Medical Association of. Academy of Medicine, 5th Ave. and 103rd St., New York, N. Y. June 4, 1930. Dr. John E. Crawford, Secretary, 708 Beach 19th St., Far Rockaway, Long Island, N. Y.

San Diego-Imperial Veterinary Medical Association. San Diego, Calif. June 4, 1930. Dr. A. P. Immenschuh, Secretary, Santee, Calif.

Southeast Georgia Veterinary Association. Douglas, Ga. June 4, 1930. Dr. Hugh F. Arundel, Secretary, Statesboro, Ga.

Kansas City Association of Veterinarians. New Baltimore Hotel, Kansas City, Mo. June 10, 1930. Dr. J. D. Ray, Secretary, 400 New Centre Bldg., Kansas City, Mo.

Chicago Veterinary Medical Association. Atlantic Hotel, Chicago, Ill. June 10, 1930. Dr. J. B. Jaffray, Secretary, 2956 Washington Blvd., Chicago, Ill.

Southeastern Michigan Veterinary Medical Association. Detroit Mich. June 11, 1930. Dr. H. Preston Hoskins, Secretary, 537 Book Bldg., Detroit, Mich.



- Texas, State Veterinary Medical Association of. A. & M. College of Texas, College Station, Texas. June 16-17, 1930. Dr. D. Pearce, Secretary, Box 335, Leonard, Texas.
- Texas A. & M. College Short Course for Veterinarians. A. & M. College of Texas, College Station, Texas. June 16-21, 1930. Dr. Mark Francis, Dean, A. & M. College of Texas, College Station, Texas.
- Oklahoma State Veterinary Medical Association. Oklahoma A. & M. College, Stillwater, Okla. June 16-17, 1930. Dr. C. H. Fauks, Secretary, 1919 W. Ash St., Oklahoma City, Okla.
- North Carolina State Veterinary Medical Association. Charlotte, N. C. June 17-19, 1930. Dr. J. Howard Brown, Secretary, Rich Square, N. C.
- South Carolina Association of Veterinarians. Charlotte, N. C. June 17-19, 1930. Dr. M. R. Blackstock, Secretary, 157 Hampton Ave., Spartansburg, S. C.
- Vermont Veterinary Medical Association. Waterbury, Vt. June 17-18, 1930. Dr. G. N. Welch, Secretary, 43 Union St., Northfield, Vt.
- Southern California Veterinary Medical Association. Chamber of Commerce Bldg., Los Angeles, Calif. June 18, 1930. Dr. W. L. Curtis, Secretary, 1264 W. 2nd St., Los Angeles, Calif.
- California State Veterinary Medical Association. Los Angeles, Calif. June 19, 1930. Dr. W. L. Curtis, Secretary, 1264 W. 2nd St., Los Angeles, Calif.
- Michigan State Veterinary Medical Association. Lansing, Mich. June 24-25, 1930. Dr. E. K. Sales, Secretary, 535 Forest St., East Lansing, Mich.
- Alabama Veterinary Medical Association. Montgomery, Ala. July 1, 1930. Dr. C. A. Cary, Secretary, Auburn, Ala.
- Illinois State Veterinary Medical Association. Bloomington, Ill. July 8-9, 1930. Dr. J. V. Lacroix, Secretary, 1817 Church St., Evanston, Ill.
- Minnesota State Veterinary Medical Association. University Farm, St. Paul, Minn. July 8-9, 1930. Dr. C. P. Fitch, Secretary, University Farm, St. Paul, Minn.
- Maine Veterinary Medical Association. Bangor, Me. July 9, 1930. Dr. L. E. Maddocks, Secretary, R. F. D. 2, Augusta, Me.
- Kentucky Veterinary Medical Association. Brown Hotel, Louisville, Ky. July 9-10, 1930. Dr. C. G. Kreidler, Secretary, Maysville, Ky.

- New Jersey, Veterinary Medical Association of. Asbury Park, N. J. July 10-11, 1930. Dr. E. R. Cushing, Secretary, 947 Prospect Ave., Plainfield, N. J.
- Virginia State Veterinary Medical Association. Staunton, Va. July 10-11, 1930. Dr. Geo. C. Faville, Secretary, Hampton Institute, Hampton, Va.
- North Dakota Veterinary Medical Association. Fargo, N. Dak. July 10-11, 1930. Dr. Lee M. Roderick, Secretary, State College Station, Fargo, N. Dak.
- Northwest Veterinary Medical Association. Chehalis, Wash. July 14-16, 1930. Dr. Clifford Ackley, Secretary, Winlock, Wash.
- Nevada State Veterinary Association. Reno, Nevada. July 16, 1930. Dr. Edward Records, Secretary, University of Nevada, Reno, Nevada.
- Maryland State Veterinary Medical Association. College Park, Md. July 24-25, 1930. Dr. E. M. Pickens, Secretary, College Park, Md.
- Montana Veterinary Medical Association. Great Falls, Mont. July 25-26, 1930. Dr. Hadleigh Marsh, Secretary, Agri. Exp. Sta., Bozeman, Mont.

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### STATE BOARD EXAMINATIONS

- Iowa State Board of Veterinary Examiners. State House, Des Moines, Iowa. June 11-12, 1930. Dr. Peter Malcolm, Chief, Division of Animal Industry, Dept. of Agriculture, State House, Des Moines, Iowa.
- Oklahoma State Board of Veterinary Medical Examiners. A. & M. College, Stillwater, Okla. June 16, 1930. Dr. Walter H. Martin, Secretary, 101 S. Evans, El Reno, Okla.
- Nebraska State Board of Veterinary Examiners. State House, Lincoln, Nebr. June 24-25, 1930. Dr. F. R. Woodring, Secretary, State House, Lincoln, Nebr.
- Michigan State Board of Veterinary Medical Examiners. State Office Bldg., Lansing, Mich. June 16-17, 1930. Dr. C. H. Clark, Secretary, 720 State Office Bldg., Lansing, Mich.

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*Los Angeles*  
*Remember the dates—*  
*August 26-27-28-29*

## THE PRACTICAL APPLICATION OF VETERINARY BIOLOGICS\*

By M. J. HARKINS, *Philadelphia, Pa.*

*School of Veterinary Medicine, University of Pennsylvania*

Biologic therapy embraces the prophylaxis and treatment of disease with the toxins of some bacteria, the products of growth under natural and artificial conditions, the so-called aggressins, various bacterial extracts, bacterins, vaccines, normal and immune sera and various specific and non-specific proteins of plant or animal origin.

The effect of biologic therapy may be specific, non-specific or an intimate mixture of the two, the latter being the usual mechanism.

The specific effects of biologic therapy are ascribed to the production and activity of antibodies, among which the antitoxins, opsonins and lysins are the most important; also, to the very reverse of this mechanism, namely, desensitization, or the removal from sensitized cells of the substances responsible for anaphylaxis and hypersensitiveness.

The non-specific effects of biologic therapy are ascribed to a general stimulation of the tissues, with the production of leucocytosis, which is known to play an important role in diseased conditions.

This is a brief resume of the effect of the injection of a biologic into the animal body, but we also know from experiments and practical experiences that there are other substances, as yet unidentified, that play important roles in the production of immunity.

In veterinary medicine we are fortunate that we can use products that in human medicine, with one exception, would be prohibitive, because of the risk of human life. I refer to the use of living, altered or attenuated bacteria and viruses (vaccines) for the production of active immunity. Undoubtedly, this is the ideal type of active immunization, as you inject and give opportunity for development of those substances which are produced during disease and which call forth a maximum immunity response.

\*Presented at the sixty-sixth annual meeting of the American Veterinary Medical Association, Detroit, Mich., August 13-16, 1929.

However, such products containing living organisms are not entirely without danger because of the variance in the susceptibility of individual animals; and again, loss of virulence of the organism, such as has been occasionally experienced with hog cholera virus. On the one hand, death of the injected animal may result and, in the other case, a false sense of security, with little, if any, active immunity resulting.

It has been stated also that the use of living organisms has resulted in a continuance of epizootics, because of an unexplained and sudden rise of virulence of the supposedly attenuated organism, also by accidental infection occurring through careless manipulation of the living organism. It is not definitely known what becomes of living organisms, especially viruses, when injected into the animal body. The possibility that they may become localized in a part or organ of the body and remain alive for some time is gaining support. It is believed also that there is a relationship between the persistence of the living organism in the body and the duration of immunity. However, there is need for considerable research upon this subject.

#### AGGRESSINS

The aggressins, which represent the products of growth of the organism in the susceptible animal and also substances evolved by bacterial disintegration, are excellent agents for active immunization but must be used properly.

The administration of aggressins to infected animals is not without grave danger and a thorough physical examination should precede each injection. An elevation of body temperature, indicating infection, would exclude their use. They are not indicated in curative treatment. Local and systemic reactions are uncommon following the injection of aggressin in healthy animals. The primary action of aggressins, as first described by Bail, is to lower body resistance, rendering the animal more susceptible to infection for a short time following injection. With the subsequent development of anti-aggressin, which requires approximately 10 to 14 days, an active immunity is established. It is therefore evident, for example, that the use of hemorrhagic septicemia aggressin is contraindicated in cattle immediately prior to shipment, since the negative phase or lowered resistance would then coincide with the period of greatest risk of exposure to infection. Symptoms resembling anaphylaxis are occasionally reported following the injection of cattle with aggressin prepared

from horses. The history of such cases usually reveals that the cattle have at some time previously been injected with either serum or aggressin of equine origin, thereby rendering them sensitive to horse protein. Such reactions, while alarming, usually are not fatal. The possibility of their occurrence in cattle may be avoided by the use of a homologous aggressin, *i. e.*, one prepared from cattle.

Organisms vary greatly in their antigenic effect in natural infection as well as when prepared and injected as bacterins. For example, the colon typhoid group readily produce demonstrable antibodies, while the staphylococci, streptococci, and others do not. The most generally accepted procedure, of heating bacterial suspensions to 56° to 60° C., has been shown to destroy to a great extent the specific antigenic activity, especially the toxins. With those organisms that readily produce antibodies, heat appears to have less effect than on those of weaker antigenic powers. It is especially upon these latter that most experimental work is being concentrated. Up to the present time, the value of bacterins has been judged largely by results obtained from the use of heated bacterial suspensions. New methods are needed and will and are being developed which will give to the practitioner products of greater specificity and value. It is not to be implied that all heated bacterins are without value but recent work indicated that in some instances part of the antigenic value of such products may be lost. This is particularly applicable to those organisms producing toxins which are readily inactivated by heat.

#### CHEMICALLY KILLED BACTERINS

Recent years have been productive of newer products in the form of chemically killed bacterial suspensions and bacterial filtrates. The work of Dreyer, Perry and Kolmer, and others has demonstrated experimentally that chemically killed bacterins are generally more antigenic than heat-killed as measured by the known methods of antibody determination. The work of Ferry and Fisher, Parker, K. F. Meyer, and that of my associate, Dr. S. Greenbaum, and myself have added to this field.

In the one instance these bacterins contain the dead organism and their products of growth slightly altered by the addition of a chemical, but with their antigenic properties lowered but little, if any. In the filtrates are contained only the unaltered products of growth. The results of over two years of experience with bac-



terial filtrates in various pyodermata, such as carbunclosis, furunculosis, deep pustular acne, and so forth, as well as pus organism infections following surgical procedure, have been most gratifying.

However, it has been noted that where such filtrates are used, reactions, both local and systemic, are much more common. In the author's experience, these reactions are related to the mode of administration as well as dosage. Intradermal injection is most productive of reaction, while intramuscular and subcutaneous are least.

Intradermal injections, while producing the most reaction, have been found more productive of antibody response as well as more rapid than other methods, as shown by Besredka and others. Recently, Meyer, working with the colon-typhoid group of organisms, demonstrated the value of intracutaneous inoculation of filtrates. This work has served to emphasize the fact that the skin plays an important role in the production of immunity. This immunity has been shown to be general in nature and not limited to the skin only. Since many infections gain entrance *via* the skin, this method of immunization merits further investigation and trial.

#### INDIVIDUAL SENSITIVITY

In the administration of bacterins it should be borne in mind that every animal is a subject in itself and will vary in sensitivity. Marked local and systemic reactions are not desirable, as it has long been recognized clinically that systemic reactions in particular and, to a less extent, severe local reactions, tend to lower resistance, or diminish the defensive forces of the body.

With the present dosage of commercial bacterins, the large animals are not so subject to general reactions as small animals, nor are healthy animals so subject as sick ones. Personally I prefer to see a slight local reaction within 24 hours following subcutaneous injection. This may be taken to indicate the degree of sensitiveness of the animal to the particular organism injected, as well as serving as a guide to the dosage to be followed. When local reactions occur, the initial dose should be repeated or only slightly increased. A second injection should not be made until the local reaction from the previous injection has subsided, which is usually in four to five days. Experimental data at hand show that barring reactions, local and general, the shorter the interval between injections, the greater and more rapidly is immunity produced.

In immunizing healthy animals I favor the use of larger doses and more in number than are now commonly practiced. This is especially true when immunizing against those organisms that do not readily produce antibodies, *e. g.*, the streptococci and staphylococci found in influenza, strangles, sinus infection, mastitis, and other conditions. In human medicine it is the practice to make ten to twelve or more injections, while veterinarians expect results with four to six injections and in some instances even a fewer number. While the economical side of this question must be considered, it cannot be hoped to obtain maximum results with only a minimum of injections. In the administration of bacterins to sick animals care must be exercised to regulate the dose, not by volume but by the number of organisms injected. It must be remembered that the system of the sick animal is already heavily taxed in its attempt to produce immunizing substances and too large a dose may compel the expending of energy greatly needed by the animal. On the other hand, small doses, aside from their non-specific effect in increasing leucocytes, act as mild stimulants to the immunizing centres and produce activity of those centres that perhaps are somewhat dormant.

#### USE BACTERINS EARLY

The earlier in the disease the bacterin is used, the more beneficial the results which may be expected, as at this time the animal has a greater reserve strength.

Non-specific therapy has been applied in many fields with reported success and the number of diseases favorably influenced by this type of treatment constantly increases. In most instances, sterile milk or milk protein is used, but heavy suspensions of various organisms, such as *B. coli*, *B. typhosus*, streptococci and staphylococci, have also been employed. In veterinary medicine it has been practiced especially in certain diseases of the eye, milk or milk protein being generally the product of choice. Non-specific stimulation of antibodies is claimed to be of value also in acute infections, especially those involving the articulations. The dosage ranges from 5 cc intramuscularly for small animals to 50 cc for larger animals. General and local reactions are not uncommon and at times are quite severe.

Intravenous injections of milk are not indicated, although bacterins for non-specific effect may be administered by that route. Caution should be exercised that the bacterin be of even

suspension and well diluted, so that the number of organisms injected approximates one-tenth that employed subcutaneously. General systemic reactions are more common by this route and are often quite alarming but appear to have a beneficial effect. The production of severe reactions is contraindicated in diseases of the heart.

Distinct from the bacterins, vaccines, aggressins and cultural filtrates which stimulate the development of an active immunity, are the antisera and antitoxins. These latter products do not stimulate any response by the animal injected but merely confer a passive immunity of comparatively short duration. The degree of immunity conferred is in direct proportion to the potency of the serum and the size of the dose administered.

Representative of such antisera may be mentioned those of anthrax, blackleg, hemorrhagic septicemia, hog cholera, white scours and tetanus. There may also be included botulinus antitoxin and anti-canine distemper serum, the practical value of which requires further verification. While anti-equine influenza serum and anti-streptococcic serum may not be so specific as the aforementioned, their use is indicated in the treatment of diseases in which the same organisms are encountered as are used in the hyperimmunization of the serum-producing animal.

#### FACTORS TO BE CONSIDERED

There are many factors to be considered in the judicious use of each particular serum, foremost of which is the accuracy of diagnosis, both clinical and bacteriological.

Experience has shown that sera are most effective when administered at the earliest possible moment after infection.

The route of administration in curative treatment should be intravenous if possible, because of the rapidity of distribution; otherwise intramuscular or subcutaneous.

In curative treatment, a large initial dose, usually 100 cc for large animals, is preferable, and in some infections should be increased and even repeated within 24 hours. It is generally necessary and advisable to repeat the initial dose at an interval of 24 hours, even though the animal shows improvement.

In prophylaxis, where it is desired to obtain an immediate immunity, the dose of serum varies with the product and the size of the animal. For example, in anthrax, the dose used for this purpose varies from 10 to 100 cc, while anti-hog cholera serum is administered on a per-pound basis. With most sera at least

30 cc should be used for prophylactic purposes. This dose of anti-hemorrhagic septicemia serum, injected subcutaneously into normal cattle immediately prior to shipment, has proved efficient in preventing infection during transit.

Tetanus antitoxin affords one of the best examples of effective passive immunity. The neutralization of toxin by antitoxin is rapid and acts in a manner similar in some respects to the neutralization of an acid by an alkali. Hence its greatest value lies in prophylaxis. It neutralizes the free toxin as soon as secreted and before it is absorbed by the nerve tissue. It also neutralizes some of the toxin "loosely united" with nerve cells. Aside from its antitoxin action, anti-tetanus serum probably contains anti-aggressins or bacteriotropins that aid phagocytosis in eliminating infection. Because of this it should not be assumed that merely introducing 500 to 1500 units beneath the skin will confer absolute protection in all instances. Consideration should be given to the conditions under which the wound was produced, the present condition of the wound and, more important, the time elapsed since the injury. If this interval has been several days, it is better to administer a greater unit strength—3000 units or more. It should be injected as near the wound as possible and preferably intramuscularly. Even if tetanus should develop under these conditions, it is likely to be mild and the prognosis more favorable. It should be remembered, however, that the protection following the injection of tetanus antitoxin, like other antisera, is of short duration. It is important, therefore, that antitoxin be present in the blood for at least three weeks, especially if it cannot be determined when the tetanus bacillus first gained access to the wound.

#### CURATIVE USE OF TETANUS ANTITOXIN LIMITED

While tetanus antitoxin is generally conceded to be remarkably effective when administered as a prophylactic at the time of injury or shortly after, the results reported from its use in treatment of animals showing symptoms have in many instances been disappointing. Frequently death ensues in spite of antitoxin treatment. The large dosage required and the uncertainty of the outcome combine to make its use as a curative uneconomical in many instances.

The prognosis is generally less favorable in those cases in which symptoms develop rapidly, with a history of only a short time elapsing from injury to the development of symptoms.



In curative treatment it is essential that an initial dose of from 40,000 to 75,000 units be injected, preferably intravenously, with subsequent doses administered at daily intervals as indicated. In human medicine, where it is more practical to inject antitoxin intraspinally, this method of administration is favored.

Better results may be obtained by the injection of an initial large dose of antitoxin than from the same unit strength administered in repeated doses at intervals. Investigation of many of the failures of tetanus antitoxin as a curative in veterinary practice reveals that an entirely inadequate dosage has been employed. Unless antitoxin can be used in liberal amounts it is usually unwise to attempt curative treatment. Even when antitoxin is employed, the proper surgical attention always should be given to the wound, if it can be located and thorough disinfection practiced.

The same factors that apply to the use of tetanus antitoxin also apply, in a general way, to botulinus antitoxin. However, in the use of this product, care should be exercised that the infection to be dealt with is really due to the botulinus organism and adequate dosage employed.

In conclusion it should be emphasized that biological products are only adjuncts to treatment and their use should not exclude other forms of treatment as indicated. Biological therapy should always be supplemented by the indicated medicinal and hygienic treatment, according to the case at hand.

#### DISCUSSION

DR. W. A. AXBY: I desire first to congratulate Doctor Harkins for the presentation of this splendid paper. It would be presumptuous on my part to attempt to add anything to it. Therefore, I shall limit my discussion to attempting to bring out some of the features of the practical application of biologics as we find them in our work.

We have applied these agents over quite a long period of time and have attempted to go about it as scientifically as we could. We feel that biologics hold for us a means for overcoming certain diseases. We believe that the understanding of the processes of immunity are necessary. Unless we understand why and how biologics should be used and the limitations to be placed upon them as curative agents, we will not get very far, from a scientific angle.

Therefore, I impress upon you the necessity of familiarizing yourselves with them, as far as you are able. Otherwise you will discredit yourselves and discredit the application of biologics in general veterinary practice. I would recommend the work of Major Kelser on the manufacture of biologics. I think it is one of the finest books that we can possibly get at this time.

Another important object is correct diagnosis, because without a correct diagnosis we cannot apply these agencies in a specific manner. And, to do this, it is necessary that there be a closer cooperation and contact between the practitioner and the laboratory. I believe that one of the finest things that could happen would be a closer relationship and a better working contact



between the practitioner and the various laboratories and state institutions. I wish to repeat that, to succeed along this line, we must be absolutely correct in our diagnoses.

Now, there are naturally limitations in the use of the various biologics. Do not expect the impossible, do not expect too much. If we understand the various pathological processes and make correct diagnoses, they will naturally be taken care of.

Another important feature is about the use of potent agents. I think that most manufacturers are honest and honorable and turn them out in a potent state. Oftimes the shipment and handling in the car, after they leave the hands of the producer, may cause them to assume undue virulence or to lose potency.

As has been so ably brought out in the paper, correct dosage and proper administration are also just as important, taking into consideration at all times the purpose in view, whether it is used as a curative or a prophylactic agent.

Because of their nature, vaccines should be handled and used with considerable caution. The susceptibility of the patient must always be taken into consideration in the injection of vaccines. There is always a possibility of injury or death if they are not handled properly, and you should limit the primary dose within reasonable limits and then, if necessary, repeat with larger amounts. We may, as has been said, cause death of the patient and this is not agreeable to the owner. On the other hand, another very important feature to consider is the fact that they may lack virulence. I believe that a lack of virulence very often is due to nothing else, in the use of these agents, but the fact that they have been carelessly handled by the veterinarian, after they came into his hands. He may go out and carry them around in the heat all day, at a temperature rising up to 120 or 130, and then take them back and place them in refrigeration again, and as a result you have no hog cholera virus. The same may be done with the use of other vaccines. If they are not handled carefully, you rest in false security.

I want to impress upon you the importance, before you inject a vaccine, of warning the owner of the patient of the fact that, if the patient has been exposed, there are possibilities that he may go down. Do not permit him to rest in a sense of false security.

Again, these agents may assume undue virulence, and may be the means of causing trouble along that line. The idea of localization and retention of the virus in the body and the length of time which has passed between the injections, I must admit, was a rather new feature to me, and very interesting.

Now, as has been said, aggressins are a most important factor, but they must be used on proper subjects and in a proper manner. Someone has advanced a theory that they are not curative, and some people's opinions have been to the contrary. They must be administered to healthy animals only. Elevation of temperature and clinical illness are bars to their use in some cases. They are of slight benefit in equine influenza.

Now, in cattle, as Doctor Harkins has pointed out, you should always inject the cattle sometime previous to shipment. The same is likewise true of the immunization of hogs with serum and virus. When we are in the vicinity of stockyards we meet with a great deal of trouble from animals which primarily have been injected when they were placed in the cars and shipped long distances, and when they are unloaded and taken out and handled, the owner and the veterinarian in charge have had a great deal of trouble. Now, these conditions would have been prevented if the veterinarian had injected a reasonable amount of serum and, after that had been injected, then injected them again with aggressin, to bring about a slight immunity, and the results would have been much better. Homologous products should be used, if possible, with cattle, because they will prevent anaphylaxis.

Now, in bacterins it is well to remember that the beneficial effect is due to the antigen introduced and not to the number of cubic centimeters of solution. There has been considerable discussion as to the comparative values of autogenous and stock bacterins. I prefer autogenous bacterins, especially in outbreaks of disease among dairy herds.

In healthy animals large doses are recommended. We must stimulate the natural, inherent immunity. Now, in too many instances, due to the economic considerations involved, the dosage is entirely too low and I think that that is one of the very important points brought out in this paper, that we should give larger doses, under all conditions, and with some animals even daily doses. Small doses, repeated, will bring about results, if repeated often enough.

Of the non-specific agents used in stimulating the reparative processes, we have had considerable experience in the use of sterile milk. We have used it in the treatment of corneal ulcers, in ophthalmia, in mastitis and in arthritis. The reactions are severe and while we have had some fatalities, the results, I believe, are encouraging and we are continuing to use them where indicated.

Now, in the discussion of sera, specific and non-specific, there is one thing I want to bring to your attention. That is, the use of bovine serum in sweet-clover poisoning. We have a great deal of sweet clover down in the hills in southwestern Ohio. We have had some very serious outbreaks in these last few years and bovine serum works like a charm. The serum has brought about satisfactory and fine results, and in that respect the dosage and the method of administration play very important parts as to the results obtained. The prophylactic use of sera, or the curative use, is important for consideration. I wish to impress the importance of the early use of sera if you expect results.

In tetanus, more especially, we recommend and wish to impress the importance of very large doses, injected intravenously, and we have followed the intravenous method over a very long period of time. I have had no experience with spinal injections along this line. Our training and practice, if we feel it worth while at all, in those very acute cases, that show up over night, we attempt to use some judgment, if we feel that there is a chance and the owner is willing to pay the bill and the animal is worth it. We inject 50,000 to 75,000 units of serum and repeat this as often as indicated, and the results have been satisfactory. Do not attempt to treat tetanus with small doses of antitoxin. Large doses will bring about results in many cases, whereas if small amounts had been given over a long period of time you would get no results. The quieter the animal is kept the better the results. If you handle him three or four times a day, you are likely to meet with bad results. In conjunction with this handling of tetanus I use lobelin and that keeps the animal quiet. Anti-hemorrhagic septicemia serum, in our case, as a curative agent, has not proven so successful as some other sera. Anti-streptococcic serum again has been somewhat of a failure in our hands, but it is probably as good as anything we have. It is always well to remember, in treating these conditions, that there is liberated, by the germ itself, a poison generated by the primary action of this particular bug, after it gains access to the blood-stream, which paralyzes the animal and you need not anticipate too much relief as a result of an injection, even of a serum. I think it is a wise and probably a good thing.

Calf scour serum, in my hands, has been very satisfactory. Influenza serum, not so much. We believe it is beneficial from a prophylactic standpoint but it has never been so successful as we would have liked to have it.

Botulinus antitoxin (polyvalent) is the best thing we have, I think. It should be injected intravenously, in large amounts. As a preventive agent, no doubt it is beneficial.

In canine distemper, the use of homologous serum and vaccine has been semi-satisfactory. We have had some beautiful results, some not so good. The new English idea will no doubt come to the front very soon and, if it does, of course, we would be very glad to use it.

Anti-hog cholera serum is very generally used in my locality and we believe it is advisable to use the clear, sterile serum. The absorption is more rapid. Above all things, give plenty of it. Use enough virus.

In conclusion, there is no doubt that the intelligent and judicious use of biologics affords the veterinarian a most potent means for the prevention and eradication of disease, but hygiene, diet, sanitation, therapeutics and all other means that assist the animal economy in resisting and overcoming disease, should always be important adjuncts.

## PERSONAL OBSERVATIONS OF BLACK TONGUE\*

*By F. P. CAUGHMAN, Columbia, S. C.*

The disease commonly known as "black tongue," is found to be prevalent throughout the southern states. This condition, or a disease which resembles it in some respects, is referred to by English and European writers as Stuttgart disease, canine typhus, canine plague, infectious hemorrhagic gastro-enteritis, etc. Not a great deal of space is devoted to this subject by European writers, but we find in Hoare's "System of Veterinary Medicine" quite an exhaustive thesis on this disease by Henry Gray. Not until the latter part of the nineteenth century do we find much space devoted to it. At this time the disease was quite prevalent throughout England, later extending into continental Europe, where it appeared in an epizootic form at Stuttgart, in the summer of 1898. So widespread was this disease at this point that the name Stuttgart disease has been given the condition.

All authorities claim that this condition is an acute, infectious disease among dogs, characterized by the initial symptoms of a sudden attack of persistent vomiting, an acute hemorrhagic gastro-enteritis with frequent bloody bowel movements, and an ulcerative condition of the mucous membrane of the cheeks, gums and tongue.

In Gray's writings, under the head of general remarks, he says:

It would be rational to inquire if this disease is a really distinct etiological entity from distemper. At first sight one might be led to answer in the affirmative, but further consideration of the antecedents of the affected animals and of the general clinical history of the malady, and a comparison of it with that of distemper, one is almost forced to conclude that if they are not identical, they are at any rate closely related in their causation.

Our American authors, Brumley and Glass, class this condition as an acute infectious disease characterized by a severe gastro-enteritis. They claim that the nature of this disease indicates that it is produced by some specific infection which at the present time has not been isolated.

After a close study of this disease, over a period of a few years, the writer makes the following statements: First, that black tongue is not infectious; second, that it is not a sequela of any other disease; third, that it is purely a nutritional disease and should technically be known as acute hemorrhagic gastro-

\*Presented at the sixty-sixth annual meeting of the American Veterinary Medical Association, Detroit, Mich., August 13-16, 1929.

enteritis. If these statements be true, then the condition we recognize as American black tongue is not the same disease known as European canine typhus. They may be similar in some respects and show some symptoms in common, yet we cannot class the two conditions as the same if we recognize one as infectious and the other as non-infectious.

Following these statements, I would like to call to your attention an experiment conducted by Chittenden and Underhill, of the U. S. Public Health Service, in August, 1917, in which they produced in dogs a pathological condition which they regarded as closely resembling human pellagra. The pathological condition was induced by these workers by feeding a diet of boiled peas, cracker meal and cottonseed oil. It was induced also, but with much greater difficulty, with a diet of meat, cracker meal and lard. The report in part is as follows:

The onset of the pathological symptoms is generally very sudden. Usually the first abnormal manifestation is a refusal to eat, and examination will reveal nothing to account for the loss of appetite. The animal lies quietly in its pen and is apathetic. After continued refusal to eat for a day or two, the mouth of the dog will present a peculiar and characteristic appearance. The inner surface of the cheeks and lips and the edges of the tongue are so covered with pustules as to give the impression of a mass of rotten flesh. The odor from these tissues is foul and almost unbearable. When stroked with absorbent cotton the mucous lining of the mouth comes away in shreds. Intense salivation is present. . . . A bloody diarrhea is present, attempts at defecation being very frequent and resulting in the passage of little more than a bloody fluid of foul odor. . . . Death usually results without any particularly striking features.

The symptoms given in this report in part are characteristic of the symptoms we recognize in black tongue.

In 1922, we find a report, published by Wheeler, Goldberger and Blackstock, on the resemblance of black tongue to human pellagra, in which they called attention to the strikingly similar geographic distribution of the two conditions in the United States, pointing out that black tongue, like pellagra, seemed to occur principally in the southern states. Their report shows they were able to produce pathological conditions, similar to those described by Chittenden and Underhill, by feeding the dog a type of diet observed in association with pellagra, and also a diet previously found by experimental test in the human subject to be a pellagra-producing diet. We must remember, however, that the similarity of the symptoms of the two diseases is confined to a disturbance of the digestive tract, notably stomatitis and diarrhea.



The records of 105 cases treated in our hospital, from January 1, 1928, to July 1, 1929, show 70 recoveries and 35 deaths. Among these cases we find the following breeds and number of dogs represented: Fox Terriers, 3; Airedales, 6; Spitz, 1; Boston Terriers, 2; police dogs, 4; Collies, 7; Bull Terriers, 7; hounds, 22; Setters, 21; Pointers, 27; common dogs, 6. Of these 105 cases, records show that 70 (66 per cent) of the total number are hunting dogs. While the percentage is very high among hunting dogs, yet we find that the disease is common to all breeds. The death rate does not show that any of the breeds has any more resistance than others, the percentage of deaths running about the same. The seasons of the year show some important facts. Seventy-four cases occurred from April 1 to September 1, showing about 71 per cent during the warm months of the year.

We know that practically all dogs that are allowed to run at large are scavengers to a certain degree. A dog may be well fed at home, with a sufficient variety of food to keep it in good condition, yet, especially at night, he goes the rounds in the neighborhood, visiting the garbage-cans and devouring what garbage he may find. This food is usually in a semi-spoiled condition, especially in hot weather, and of course is unfit for consumption. Or he may have the habit of burying a bone after a full meal, digging it up after a few days, and consuming what decomposed meat there may be on it. Sometimes proper care is not shown in feeding the dog, by giving it food that has become unfit for the family to use. Consumption of this kind of food, we believe, is the cause of all cases of black tongue. The writer has yet to find a case of black tongue in house pets where the food given is always good. There is no reason why we would not find cases among these dogs if they are fed unwholesome food.

The first symptom usually shown is a loss of appetite. This may be the only clinical symptom shown for one or two days, when the mouth lesions show up. Here we have a necrotic stomatitis. The mucosa of the cheeks and gums shows patches of necrosis, and peels off very readily, leaving a raw and sometimes bleeding surface. Salivation shows first by a slight dribbling of saliva, later it is drooling and ropy, occasionally blood-stained and hanging from the corners of the mouth. The odor from the mouth is very offensive and characteristic. In fact, it is so characteristic that it is possible to make a diagnosis of black tongue in the dark, provided you are close enough to get this



odor. Deglutition is very difficult. There is no elevation of temperature.

Vomiting is very, very rare, contrary to Stuttgart disease. Diarrhea is present, which is very seldom preceded by constipation. A smacking sound is heard when the animal attempts to drink, which is very difficult. Later the diarrhea develops into a very serious condition, which is an important factor in the successful treatment of the disease. You will find the dog frequently straining and passing only a small amount of fecal matter, of a semi-liquid consistency, streaked with blood. Sometimes these bowel evacuations consist entirely of blood. As the disease progresses toward a fatal termination, the animal stays in a recumbent position, with its mouth in the basin of water, making feeble attempts at drinking. The eyes are sunken in the sockets. There is a general listless condition. The temperature at this time will be subnormal. Death follows such a stage as this in a short time.

Cases that respond to treatment will show a marked improvement in from two to three days. The stomatic condition clears up; the bowel movements are less frequent and the appetite returns. Eating at first is painful and slow. In cases that recover, the course of the disease is from five to twelve days.

Postmortem examination shows a necrotic condition of the mouth and throat, and thickening of the mucosa of the stomach, with hemorrhagic areas. In the small intestines we also find a thickening of the mucosa and a distinct hemorrhagic condition appearing in longitudinal streaks. Bowel contents consist of a small amount of a reddish, slimy mucous. The liver, kidneys and spleen show no pathological changes. The lungs are normal, except occasionally they may show a slight pneumonic condition.

The treatment we have used for the past two years has been very encouraging, compared to the success we formerly had. This consists of yeast and a 1-to-500 acriflavine solution. We find the dry granulated yeast given in one-ounce capsules to large dogs or in  $\frac{1}{2}$ -ounce capsules to the small breeds, three or four times daily, is very satisfactory. Along with each capsule of yeast, 1 to 2 ounces of the acriflavine solution is given. If administered properly, about one-half of the amount is swallowed by the dog, the other portion acting as a mouth wash when the animal's head is released. Fresh water should be kept in the cage at all times. We do not swab the mouth and throat at all. No food is given for the first 48 to 72 hours. At this time, if the dog

is responding to treatment, it will take a few small amounts from day to day until the patient recovers. We never resort to force feeding except in administering the yeast.

The attention given the animal during the convalescent stage is very important and should not be overlooked. Do not exercise, especially to the extent of hunting, for at least two weeks. Feed two or three times daily, giving good food with plenty of meat and milk. If these directions are not properly carried out, the dog will come down with a relapse or second attack within two to three weeks, and this attack will prove fatal in almost every case.

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### The Pellagra-Preventive Action of Canned Salmon

In connection with studies relating to the pellagra-preventive properties of various food substances, the United States Public Health Service has recently announced that canned salmon (Alaska chum) contains the pellagra-preventive factor. By reason of its potency in preventing pellagra and its availability in the preserved state, salmon may be considered a fair substitute for meat in the area of pellagra endemicity where meat is not readily available. The demonstration of the pellagra-preventive value of canned salmon furnished further evidence of the soundness of the working hypothesis that black tongue in dogs is the analogue of pellagra in man.

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Crater of Giant Geyser, Yellowstone National Park,  
on Union Pacific System

## CESAREAN SECTION IN THE BITCH

By F. F. PARKER, *Des Moines, Iowa*

While cesarean section is considered a major operation, it holds little fear for the man who is frequently called upon to perform it. After making the usual number of mistakes, he selects the method that has proven the best and safest for him and continues to perfect it as best he can.

Veterinarians having mixed practices some times sidestep this operation and for good reason. First, they may not have proper equipment or assistants, or they may not be called upon to perform it frequently enough to keep in practice. Skilled assistance is very necessary for the successful completion of an operation of this nature.

The many methods of procedure are due to the different environments under which the operation is performed. Every natural chance should be given the matron before deciding to operate, such as manipulation, pituitrin and plenty of time—fifteen or more hours not being dangerous in many cases, while in others, where labor is more violent, it should be done much sooner. We are often able to use forceps with success, but in many cases they are discouraging in the extreme, as more puppies are killed than are saved by this procedure.

There are several things to be considered while trying to decide whether or not to operate. No one wishes to suggest a \$25 operation on a \$10 female unless she has been mated to a high-class sire, and it is the puppies the owner desires to save. Careful examination, therefore, should be made to determine as nearly as possible that there are at least two or more puppies to be saved and that they are alive, as most of these cases are for clients who are breeders and it is a money consideration with most of them.

However, sentiment very often enters the case. How uninteresting, not to mention unprofitable, small-animal practice would be were it not for the sentiment that goes with it. I have often performed cesarean section to save the life of just one puppy.

Boston Terriers probably furnish 95 per cent of the subjects for cesarean section and the English Bull Dog the other 5 per cent. It is only occasionally that the operation is necessary in any of the other breeds. This is due to the large heads and shoulders

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of the puppies of these two breeds, and the small pelves of the mother.

On deciding to operate, it should be done with as much speed and dispatch as possible. As you will note from the following description, I have chosen the median line for my location to operate. It has one particular advantage in that no noticeable scar is left and also no unsightliness is seen while the healing process is being completed.

Place the patient on the table, ventral side up and tie all four legs. Shave and disinfect a liberal area; paint with either tincture of iodine or a 5 per cent solution of mercurochrome. Anesthetize with ether alone. Thus far I have not tried spinal anesthesia but think that some time it will be used by all of us.

#### TECHNIC OF OPERATION

As soon as the patient is anesthetized, loosen the hind legs and place the patient squarely on her back until the peritoneal cavity is opened. Thus the skin, muscle and peritoneum are in perfect apposition. The incision is made on the median line, from about one inch posterior to the umbilicus, back to near the pubic arch. Place sterile cloth or gauze around the patient and turn on her side toward the operator. Preparation must have already been made to care for the young. Therefore, an assistant must be waiting to receive them, as they are practically all still-born, and often require skilled and energetic action to save them. Your reputation depends on saving all of the young.

There will nearly always be a fetus in the body of the uterus; raise this pup up through the opening and make the incision on the ventral side, as near the bifurcation as possible, using the fetus as a background for the knife. Few blood-vessels will be encountered at this point, so make your opening plenty large as a torn uterus is hard to mend. All puppies are removed without any difficulty through the one opening. After removing all placenta and fluids, inject a dram or two of 5 per cent mercurochrome into each horn of the uterus.

Close the uterine incision with either A or B black sewing silk or number O medium, hard chromic catgut, using the modified Lembert, or rather a continuous Lembert suture, quite close together and do not retrace. This can be done very speedily by using the forefinger in the anterior incision in the uterus to keep the uterus taut while sewing with the other hand. A round needle should always be used for suturing.



After this is done, carefully replace the uterus and bring the omentum down into its natural position. Now place the matron in the exact position she was in when the initial incision was made and close same with one set of interrupted silk sutures (No. 7) about one-third of an inch from the lip of the wound and one-third of an inch apart, inserting down through the skin, muscle and peritoneum. Care should be taken to tie every other stitch quite loosely. This is done in order to save the possible cutting of the stitches.

An attendant should hold the matron until she is entirely out from under the anesthetic, and over her excitement. Then she is placed in a maternity crib with her young, and kept as quiet as possible. No bandage or covering of the wound is necessary. She will soon start caring for her young.

#### THE MATERNITY CRIB

These maternity cribs are about  $3\frac{1}{2}$  feet long,  $2\frac{1}{2}$  feet wide and 2 feet high. They are all lined with perforated metal, fly-proof and on rubber-tired wheels, so that they can be moved about near heat or cold, as weather conditions may demand. The principal thing about them is that, by being covered, they will not allow the matron to stand on her hind legs, as they are wont to do, and endanger their stitches.

The wound is sponged off with boric acid solution twice daily and painted with 5 per cent mercurochrome. The stitches are carefully watched at each dressing and, if one seems too tight, it is removed. The fourth day all of the closely tied stitches are removed. The others are removed the next day, providing there are no complications. The patient is usually discharged two days later.

We have made a rule not to allow the client to visit the patient while in the hospital. This is necessary especially in case the patient happens to be a pet, as it may cause over-excitement, and in one instance produced a regular fright fit. Although we may profit by the mistakes of others we profit most by those we make ourselves. We used to allow owners to take the patients home the following day, and some times the same day as the operation, but it brought grief in several cases. The owner invariably allows the matron too much freedom and the stitches cut in and make trouble. Thus, when you remove the stitches in the home, the wound occasionally breaks open in possibly 24 hours—or maybe sooner. When this occurs and the stitches have to be replaced,



the entire healing process will often cover a period of several weeks, which is much different than having them well and sent home in seven days.

I wish to relate a very recent happening, wherein retention of the urine occurred, and it became necessary to puncture the bladder close to the pubic arch in order to get relief. This had to be done the second day, also. After this it was possible to catheterize, but, owing to the great distention of the bladder, there was grave danger of tearing of stitches in the original wound. However, much to my relief, this did not occur, and except for the patient having to stay in the hospital a few days longer than usual, no harm had been done.

We are frequently confronted with the question, "If once a cesarean section, does that mean always a cesarean." The answer is "No." It means that the same condition that caused the first operation may cause it again, but quite often the matron will have a natural birth, and then require a cesarean section the next time.

We are also asked, "How many times can the operation be successfully performed?" The answer is as many times as the matron becomes pregnant. We have found some adhesions on the second and third operations but nothing alarming.

Again, I wish to emphasize the advantage of operation in the hospital under the best sanitary conditions and keeping the patients until they are ready to be discharged.



Temple Square, Salt Lake City

## VETERINARIANS AND LIABILITY INSURANCE

By MURRAY G. JENKINS, *New York, N. Y.*

For many years a large part of my practice in the state of New York and elsewhere has been devoted to the defense of professional men engaged in the practices of physicians, surgeons, dentists, veterinary surgeons, podiatrists, masseurs and kindred professions or semi-professional callings. Doubtless because of an experience somewhat more extended in matters of this sort than that of the average attorney, I have been asked to point out to the members of your organization and to the members of your profession certain points of law peculiar to your profession and also the advantages to veterinary surgeons of the protection afforded by insurance against malpractice claims and lawsuits. Claims and suits of this nature are becoming so numerous that every profession must give them careful attention and their members should guard themselves from what is a real menace.

Veterinary medical and surgical practice is not the practice of an exact science. Each individual case brought to the attention of the practitioner is subject to general principles and usages in the profession, and requires the application of knowledge, sound judgment, care and diagnosis, and the exercise of patience and skill. Inevitably even the most careful and learned practitioner is bound to make errors. The ingenious claimant, and, alas, the conniving lawyer, can easily convert these errors in a court-room to be evidences of malpractice or neglect. As errors almost invariably result in damage to the owner of the animal, a jury, as experience has shown, is prone to make an award regardless of the reputation of the professional man and, of course, without regard to the extent of his purse.

In addressing a group of eight hundred dentists recently, in the city of New York, I mentioned the fact that there were in my office for defense approximately three hundred and seventy-five malpractice cases awaiting trial. Subsequently a member of that profession, in commenting upon my talk, said that in his opinion a dentist must perforce consider every patient who entered his office for treatment as a potential plaintiff. As no professional man can guarantee a good result in any case and as every community of our country contains the most litigious

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people in the history of the world, I regret to endorse the inherent truism of the remark. What the dental surgeon said is as fully applicable to the veterinary surgeon.

Claims of malpractice are usually based upon circumstances that are three-fold in nature.

1. An owner's claim of injury to, or the death of, an animal through the alleged malpractice of the veterinary surgeon.
2. An owner's claim because of the loss of an animal through its disappearance.
3. A citizen's claim for damages resulting from the attack of an animal entrusted to the care or custody of the veterinarian.

All three of these classifications of lawsuits may be covered by appropriate insurance indemnification policies. The first and second groups of claims are covered by the form of policy known as Veterinarians' Liability Policy. This policy, which is of the group type, is quite inexpensive, yet affords ample protection for any damage loss to the practitioner except a loss caused by the theft of the animal temporarily in his custody. As an animal is, in the eye of the law, a chattel, the general rules of law applicable to the bailee of a chattel apply, and where a theft has taken place and can be proven, the veterinarian is not responsible to the bailor, provided the bailee exercised reasonable diligence in safeguarding the animal entrusted to him.

#### HOSPITALS COMPLICATE SITUATION

The third group of claims and suits referred to is not covered by the Veterinarians' Liability Policy, as that group of claims does not, strictly speaking, directly grow out of the professional practice of the veterinarian against whom the claim or suit is preferred. A liability insurance company might well adopt the practice of furnishing a rider to such veterinarians as maintain animal hospitals which should sufficiently indemnify them against damage sustained by a citizen bitten by a dog escaping from his temporary custody, or a citizen kicked by a horse, or for injuries or damages sustained through other like causes.

Needless to say, every practitioner covered by the foregoing policies is protected from not only the heavy damages that might be awarded by a jury for the loss of, or injury to, an animal under his care or in his custody, but is saved from the expense of hiring counsel to defend himself and the costs of investigation and preparation for trial. It may be said in passing that fees of

attorneys, with the investigation expenses in any given instance, would probably exceed the cost of such an insurance policy for a period of ten years. Such a policy would indemnify a man against neglect, accidental or even stupid blunders in such ordinary daily practices, for instance, as inoculations, casting before treatment, castrating, spaying, worming, obstetrics, surgical incisions, medicinal dosage, death through accidental poisoning, refusal to answer professional calls, strayed animals, and operations, treatments and advice of every nature.

*The law relating to veterinarians and to malpractice actions arising out of alleged misconduct of veterinarians is simple and well settled, although not always easy of application.*

A veterinarian by taking charge of a case, impliedly represents that he possesses, and the law places upon him the duty of possessing, that reasonable degree of learning and skill that is ordinarily possessed by veterinarians in the locality where he practices, and which is ordinarily regarded by those conversant with the employment as necessary to qualify him to engage in the business of practicing veterinary medicine and surgery. Upon consenting to treat an animal, it becomes his duty to use reasonable care and diligence in the exercise of his skill and the application of his learning to accomplish the purpose for which he was employed. He is under the further obligation to use his best judgment in exercising his skill and applying his knowledge. The law holds him liable for an injury to the animal resulting from want of the requisite knowledge and skill, or the omission to exercise reasonable care, or the failure to use his best judgment.

#### AVERAGE LEARNING AND SKILL EXPECTED

The rule in relation to learning and skill does not require the veterinarian to possess that extraordinary learning and skill which belong only to a few men of rare endowments, but such as is possessed by the average member of his profession in good standing. Still, he is bound to keep abreast of the times, and a departure from approved methods in general use, if it injures the animal, will render him liable, however good his intentions may have been.

The rule of reasonable care and diligence does not require the exercise of the highest possible degree of care, and to render a veterinarian liable, it is not enough that there has been a less degree of care than some other veterinary surgeon might have shown, or less than even he himself might have bestowed, but



there must be a want of ordinary and reasonable care, leading to a bad result. This includes not only the diagnosis and treatment, but also the giving of proper instructions to the owner of the animal in relation to conduct, exercise and the use of the injured or sick animal.

The rule requiring him to use his best judgment does not hold him liable for a mere error of judgment, provided he does what he thinks is best, after careful examination. His implied engagement with the owner of the animal does not guarantee a good result, but he promises by implication to use the skill and learning of the average veterinarian to exercise reasonable care and to exert his best judgment in the effort to bring about a good result.

#### DUTIES AND RESPONSIBILITIES OF VETERINARIANS

The law courts, in dealing with duties and responsibilities of a veterinary surgeon, emphasize greatly the obligations of the latter to conform with generally recognized and well settled methods of procedure. For example, the highest court of Iowa, in 1917, wrote a most interesting opinion in a suit brought by one Hollingsworth, the owner of a herd of hogs, against the Midwest Serum Company, of Omaha, Nebraska. In this case the owner of the hogs had obtained a jury's verdict against the serum manufacturer at the Trial Court; the Appellate Court in reversing the judgment below found that the evidence of veterinarians called as experts established lack of negligence on the part of the serum producer. The chief claim of negligence was that the serum failed to be of sufficient potency to prevent numerous deaths and failed to comply with a statute of the State fixing the standard potency of anti-hog cholera serum for successfully treating, curbing and controlling hog cholera. The statute conferred the fixing of this standard upon the director of the Iowa State Biological Laboratory. The opinion of the Court should be of great interest to veterinarians, many of whom testified on the one side or the other. After reviewing all of the testimony of these experts, it was held that the generally approved and accepted methods of production and testing were followed by the serum company and by the veterinarians who performed the inoculations.

Reference is made to this case as an example of the type of suit that members of this body may at any time face in the capacity of the party sued or in the capacity of an expert witness.



Another interesting case from the same state is that of *Morrison v. Dr. Altig* (134 North Western Reports 529). A veterinarian was charged with malpractice for performing a surgical operation gratuitously upon the shoulder of a horse, resulting in its disablement because of the unskillful manner in which he performed it. At the time of the operation the veterinarian had not as yet procured his license, although he had been graduated from a veterinary college. It was held by the Court that the mere fact that he assumed, with some knowledge of veterinary matters and with some claim to skill, even though he performed the act as a neighbor, rendered him responsible for mistakes in his surgical work.

The Supreme Court of Alabama, in the case of *Staples v. Steed* (167 Alabama Reports 241) held that a veterinary surgeon who threw a horse to the ground, preparatory to cauterizing a spavin, so violently as to rupture its diaphragm, in consequence of which the animal died, was liable for the value of the horse since the throwing of the animal was a part of the operation or treatment. The malpractice in throwing the horse consisted of throwing it upon the side of a hill instead of leading or inducing the horse to go upon level ground.

It would be manifestly impossible to review extensively in a paper of this sort the varying decisions of the various types of malpractice actions brought against veterinarians in their treatment of or operations on horses, cattle, hogs, dogs and other animals. No such attempt will be made. The two or three cases mentioned are illustrative of the type of lawsuit which has been brought in the past and which is multiplying in number throughout the United States.

#### SOME HYPOTHETICAL QUESTIONS

Dr. H. Preston Hoskins, Secretary-Editor of the American Veterinary Medical Association, was apprised of the fact that this paper was being prepared by me and has submitted four hypothetical questions for discussion. In subsequent paragraphs I will set forth the four questions with my conception of proper answers thereto.

*Question 1:* A licensed, graduate veterinarian, just out of college, administered the copper sulphate treatment to a flock of sheep suffering from stomach-worm infestation. The veterinarian followed directions given in a standard text-book. The directions, on account of a typographical error, stated that the

copper sulphate solution should be made up of a 10 per cent strength instead of 1 per cent. Several of the sheep died following the treatment with the strong solution. The owner prosecuted the veterinarian for the loss of the sheep.

*Answer:* The veterinarian is responsible.

*Discussion:* A licensed veterinarian is held out by himself to the community to possess that ordinary degree of learning which an educated veterinarian in his community is supposed to possess. The administration of copper sulphate treatment to sheep suffering from stomach-worm infestation is one of those items of knowledge which the average veterinarian is assumed by the law to possess. Lack of ordinary knowledge in the administration of a treatment, followed by a bad result, creates liability. (*Pike v. Hosinger*, 155 N. Y. Reports 201.)

*Question 2:* A veterinarian was called to a farm on an obstetrical case. He found a very valuable pure-bred cow in labor. Examination showed a mummified five-months fetus and the history indicated that this fetus had been carried for approximately seven months after the death of the fetus. The vagina was not dilated in proportion to the os uteri and was very badly lacerated as a result of the necessary manual manipulation. The cow died and the owner started suit against the veterinarian for the death of the cow.

*Answer:* The veterinarian is not liable.

*Discussion:* Through causes over which the veterinarian had no control whatsoever, the ailment developed in the cow. He was called upon to treat a condition that was unusual. The facts, as far as stated, indicated that he attempted delivery through ordinary methods of manual manipulations. The mere fact that a bad result followed, after skillful effort, does not create liability. A veterinarian does not insure a good result. He simply holds himself out to possess ordinary skill and ability to bring about a good result. He promises to use his best efforts to attain that purpose. The law does not require him to warrant, guarantee or insure that the purpose desired will be absolutely attained. Such a law would be foolish. Generally speaking, the law is wise and sensible in malpractice cases.

*Question 3:* A farmer calls up a veterinarian by telephone and advises him that he has a colt that he wishes to have castrated. The veterinarian suggests that the colt be brought in to his hospital for the operation. About ten days later this client brings a stallion in to town and leaves him at the hospital of the veter-

inarian in question. The veterinarian was out in the country at the time and returned several hours later. The veterinarian saw the stallion in the box stall in his hospital and asked the attendant whose it was. The attendant advised the veterinarian that the stallion had been left there by Mr. So-and-so. The veterinarian assumed that this was the animal concerning which Mr. So-and-so had telephoned, and proceeded to castrate the stallion. The owner returned shortly after the operation and very much to his amazement found the stallion castrated. He told the veterinarian that this was not the animal concerning which he had telephoned and started suit against the veterinarian for damages.

*Answer:* The veterinarian is liable.

*Discussion:* The statement of facts in the question indicates that the owner desired the castration of a *colt*, not a *stallion*. There was a ten-day lapse between the telephone conversation and his discovery of the presence of a strange stallion in his establishment. The veterinarian should have been put upon inquiry. His questioning of his assistant simply went to the ownership of the stallion. His hasty conclusion that the animal left in his establishment was the same one that had been previously referred to over the telephone was the mental process of an imprudent, careless, negligent veterinarian. There is a vast difference between a colt and a stallion. One would expect of an ordinarily intelligent veterinarian that he press his inquiries to the point of obtaining information upon which he could proceed to treatment or operation with certainty. The law condemns hasty assumptions upon inadequate facts. A veterinarian should be sure of his facts before proceeding to treatment or operation. Diagnosis in any case should be the result of a careful investigation, examination, questioning, observation, and should be reasonably definite before treatment be accorded or operation performed. The general rule that applies to business, driving of an automobile, or the conduct of professional treatment is alike in this one respect, namely, a man is responsible for the damage that follows his own stupid blunders.

*Question 4:* The owner of a very valuable police dog leaves the dog at the hospital of a veterinarian to be boarded for a week or so, while the owner is away on a vacation. The dog was placed in a cage on the second floor of the hospital of the veterinarian. An attendant left the door of the cage insecurely locked and the dog got out. The dog could not get through the door leading to the first floor and jumped out the window, breaking a leg. The

fracture was a very bad one and the dog was permanently lame. The owner of the dog sued the veterinarian for the value of the dog.

*Answer:* The veterinarian is liable.

*Discussion:* A veterinarian is responsible for the acts of his assistant or employe in the ordinary scope of their employment. The rule of law is no different with regard to the veterinarian than it is to a railroad or to the owner of an apartment-house. The railroad is responsible for the negligent operation of trains entrusted to engineers, conductors and brakemen. The owner of an apartment-house whose janitor proceeds to wash the sidewalk on a cold day, permitting water to freeze on it, upon which a member of the public steps, slips and breaks a leg, is, of course, liable. The fundamental rule of the common law is that the master must respond in damages for the negligence of his servant. In the foregoing question the assistant neglected to leave a large, powerful dog securely fastened in a place strange to the dog, with knowledge that the dog would be likely to use every effort to extricate himself. The knowledge of the employe is chargeable to the employer, as is his negligence. Hence the liability for the escape of the dog and the damage to the owner.

The foregoing hypothetical questions typifying the daily risks of a veterinarian's profession are also illustrative of the type of lawsuit which is constantly brought throughout the country. I have been very much pleased to have these questions put to me and to have the opportunity to give the technical answer in the foregoing fashion.

#### THE VETERINARIAN A MARKED MAN

The veterinarian is looked upon as a marked man in his community. He possesses a higher education, greater learning and a special skill in the treatment of animals. In all communities his words with regard to the subject matter of his profession are listened to with interest and followed with respect. Not infrequently when diseases peculiar to stock, always prevalent to a greater or less extent, spread through great stretches of territory, the veterinarian is looked upon by thousands for guidance, for help and as a savior of their property. The highest professional ideals are expected of him. His constant application to his work is expected; his keeping abreast of the times through the study of new methods of procedure, new serums and viruses are required



by statute and common law. His responsibility is greater than ever before with the health of the community in no small respect dependent upon his discovery of animal ailments and the proper care and treatment of such ailments; the science of bacteriology had broadened the scope of his activities. As stated before, he is indeed regarded as a marked man of learning, skill and ability.

It is the experience of all lawyers that the greater the responsibility and the greater the learning of an individual the greater is the liability that the community imposes upon him for improper practices or even for mere mistakes—mistakes either of judgment or mistakes of fact. When the layman in some feeble way comprehends the multiplicity of activities assumed by the average veterinarian, the difficulties of his work, the tremendous learning he must attain to perform it adequately, great consideration should be given to him. Unfortunately when a bad result follows treatment or intelligent, honest effort to effect a correct diagnosis proves unavailing, the average man is ready and willing to charge the blame upon the man of skill and learning. In substantially the same proportion that members of the medical and dental professions find litigation increasing in leaps and bounds throughout the length and breadth of our country, so, too, is the experience of the veterinarian. Organizations of the type before whom this paper is read are a healthy, wholesome agent to block the spread of the malpractice menace through the wise dissemination of their purposes to the community; by raising their voice in just protest when occasion arises; by the mutual cooperation of their members aiding and assisting one another through their open discussion of problems peculiar to the profession; and by raising the standard of their profession for learning, skill and professional conduct. All these things are most desirable. Organizations in every community, with the greater national organization, should stamp upon the minds of every community that the veterinarian is today entitled to all the attributes and privileges that should be accorded to the man of erudition and high professional attainment.

In closing this paper permit me to express the sincere hope that my comments upon the law of malpractice as applicable to your learned profession, together with my comment on insurance that will indemnify your members against loss in damages and expense for protection, will be of benefit.

## THE INCIDENCE OF INTERNAL PARASITES IN DOGS AT WASHINGTON, D. C.

By WILLARD H. WRIGHT, *Washington, D. C.*

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In spite of the many dogs treated by veterinarians, particularly canine specialists, and the number of necropsies performed, there is little in the way of published data upon the actual incidence of internal parasites in these animals. The prevailing opinion among veterinarians seems to be that the percentage of infestations is high and that internal parasites are widespread. Some, however, do not concur in this opinion.

Gorton<sup>7,8</sup> believes that veterinarians are placing entirely too much emphasis on the importance of parasites in dogs and questions the practice of promiscuous dosing with anthelmintics. Prime<sup>20</sup> contradicts the idea that 90 per cent of dogs carry intestinal parasites and states that in his experience the percentage is nearer nine than ninety. On the other hand, Kirk<sup>15</sup> believes that 90 per cent of dogs are parasitized. Kirk's estimate agrees more closely with our figures and is quite in accord with some of the published data on this subject. Of course, parasitism with any given kind of worm varies from place to place, year to year, and season to season, and with dogs of different ages and habits.

Sommer<sup>23</sup> reported that of 50 dogs from the Washington, D. C., pound examined by him, 96 per cent were parasitized. Hall<sup>12</sup> found that of 74 dogs emanating from the Detroit city pound, 67 (91 per cent) had internal parasites. In the same paper are mentioned the observations of Hall and Foster, which indicated that dogs in Washington were even more frequently infested than Detroit dogs. Finally, Guberlet<sup>9</sup> reported internal parasites in 90 per cent of Oklahoma dogs examined by him.

Observations such as these not only serve to record data showing the importance of parasites but, when taken over a period of time, are valuable aids in determining the rise or fall in the prevalence of different species as influenced by changing conditions of habitat, food habits, environment of the hosts and other factors. Some of these parasitic worms occur also in man and

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their importance from the standpoint of public health warrants a knowledge of their prevalence in canine hosts.

During the course of anthelmintic investigations, opportunity was afforded for a study of the prevalence of parasites in dogs secured from the District of Columbia pound. In the period from September 1, 1928, to May 15, 1929, 150 animals were involved in these investigations, and the following observations deal with the parasites found in these dogs. The animals used in these tests included terriers, Bulldogs, Poodles, hounds and Collies, and are believed to be fairly representative, outside of the toy breeds, of the dog population of Washington. The majority were mongrels, but some of apparently pure breeding were included.

After the administration of the anthelmintic, feces were gathered regularly each morning and washed through a series of screens of various mesh sizes. All worms passed were collected and counted. The dogs were killed on the fourth or fifth day after dosing and all worms not removed by the anthelmintic were collected, identified and recorded.

Six animals not included in these observations were negative for parasite ova on fecal examinations with the salt-flotation method and the Stoll egg-count method, and were turned over to other members of the division staff for use in other investigations. The fact that ova were not detected in the feces does not necessarily indicate that these dogs were free of parasites. Female worms present may be immature, only males may be present, or for some undetermined reason female worms may be apparently infertile and not producing eggs. Many supposedly negative dogs were used for toxicity tests and are included in these observations. Several of these were found to be parasitized. Furthermore, some of those animals used by other members of the division were subsequently found on necropsy to have worms. In view of these facts, it is believed that the percentages recorded here are fairly accurate and reflect to a close degree the actual prevalence of parasites in Washington dogs.

Of the 150 animals examined, 145 (96.7 per cent) were found to have parasites. The majority harbored more than one species, many having four, and some five, species.

#### TREMATODES

Several species of flukes have been reported from dogs in the United States, among them being *Cryptocotyle lingua*, reported

under the name of *Hallum caninum*, by Wigdor, from a dog at Detroit, Michigan; *Alaria americana*, *Alaria michiganensis*, *Paragonimus kellicotti* and *Nanophyetus salmincola*, the last two being the most important pathologically. The former occurs in the lungs, while the latter is an intestinal fluke and was first reported by Donham,<sup>5</sup> in 1925, as the cause of the so-called salmon poisoning in dogs.

In these investigations, flukes were recovered from 8 (5 per cent) of the 150 dogs, the number varying from 3 to 59 in any one dog. These specimens were all identified, with the assistance of Dr. E. W. Price, as *Rossicotrema venustum* (Ransom, 1920), Ciurea, 1924.

Ransom<sup>21</sup> reported this fluke from the fox and cat and from a dog at Washington, D. C., this report from the dog being the only one from this host as far as is known. However, our findings show that the fluke is probably of more frequent occurrence than the previous record indicates. Ransom gives the length of the fluke up to 1.3 mm., with a maximum width 0.23 to 0.65 mm. There is a considerable variation in the size of the specimens collected by us, the length varying from 0.77 to 1.27 mm., and the maximum width from 0.26 to 0.65 mm. The small size of *Rossicotrema venustum* probably leads to its being overlooked on postmortem examination. In all our cases, flukes were recovered from only those animals exhibiting ova in the feces on a preliminary Stoll egg-count. Under the pressure of work entailed by numerous necropsies, it is possible that we have overlooked these flukes in other dogs.

The life history of *R. venustum* is unknown, but judging from related forms, it probably has an intermediate stage in fish. Ciurea<sup>3</sup> demonstrated by feeding experiments that fish (*Scardinius erythrophthalmus*, *Abramis brama* and *Blicca bjorkna*) were the intermediate hosts of the metacercariae of a closely related species, *Rossicotrema donicum* Skrjabin and Lindtrop, 1919, found in the dog in Russia and Roumania.\*

#### CESTODES

The most common tapeworms present were those of the genus *Dipylidium*, these being found in 102 (68 per cent) of the 150 dogs, the number varying from 1 to 372 in any one dog. The worms were not examined in every case to determine the species, though the few identified proved to be *Dipylidium caninum*. The

\*Since the preparation of this paper, Witenberg has classified *R. venustum* and *R. donicum* as synonymous.



high incidence of *Dipylidium* might be expected, because of the nature of the life cycle and the prevalence of such intermediate hosts as fleas. Joyeaux<sup>14</sup> has demonstrated that fleas, *Ctenocephalus canis* and *Pulex irritans*, become infested with the intermediate stage of *Dipylidium* while in the larval stage, the adult flea being incapable of ingesting the egg of the parasite. The dog biting louse, *Trichodectes latus*, has also been incriminated as an intermediate host of *Dipylidium*. The great prevalence of *Dipylidium* emphasizes the importance of this parasite from the standpoint of public health, inasmuch as *Dipylidium caninum* has been reported as a parasite of man over 80 times.

Tapeworms of the genus *Taenia* were found in 13 (8.7 per cent) of the 150 dogs. All of the specimens encountered were *Taenia pisiformis*, indicating that the hosts had fed on offal from rabbits infected with *Cysticercus pisiformis*, the bladder-worm occurring in the body cavity of those animals. In this connection, it is interesting to note that this tapeworm was not recovered from any of the dogs prior to the middle of December, following by five weeks the advent of the open season on rabbits in the territory contiguous to Washington. In one animal from which 38 specimens of *T. pisiformis* were recovered, one specimen complete with scolex and 10 cm. in length was found alive in the cecum. The presumption is that the tapeworm had been expelled from the small intestine by the action of the anthelmintic and was temporarily retained in the cecum; probably it would have passed out in a day or two. No *Taenia* species were recovered from the feces of this dog, although several *Dipylidium* segments without scolices were passed following the administration of the anthelmintic.

#### NEMATODES

Ascarids were found in 60 (40 per cent) of the animals. The commonest form was *Toxocara canis* (frequently referred to as *Belascaris marginata*), which was present in 50 animals (33.3 per cent). *Toxascaris limbata* was present in 15 dogs (10 per cent). Five of the 60 animals carried both species of worms. The extent to which an animal may be parasitized and yet not show ova on fecal examination was well illustrated by dog 1539, from which 106 immature specimens of *Toxascaris limbata* were recovered.

Prenatal infestation with parasitic worms has been reported in a considerable number of cases involving several different groups of these worms. Fülleborn<sup>6</sup> produced prenatal infestation of pups by injecting under the skin of a pregnant bitch thousands

of *Belascaris* larvae. Shillinger and Cram<sup>22</sup> confirmed Fülleborn's results by feeding embryonated *Belascaris* eggs to a pregnant bitch and finding encysted larvae in 8 of 12 pups. Hadley, Warwick and Gildow<sup>10</sup> demonstrated prenatal infestation of fox pups with *Belascaris* and Augustine<sup>1</sup> also reported on prenatal infestation in dogs.

During the course of our investigations, we observed a case where prenatal infestation occurred naturally and undoubtedly accounted for the death of some or all of five pups born of a mongrel mother. This dog (1569) was secured on March 17, and whelped on April 6, 1929. On fecal examination by the salt-flotation method and the Stoll egg-count method, the bitch showed an infestation with ascarids, hookworms and whipworms. Two of the five pups died shortly after birth. Press preparations showed parasitic larvae in the liver and lungs of these pups. Portions of the liver, lungs and kidneys were digested and placed in the Baermann apparatus and *Toxocara* larvae were recovered. A third pup which died a few days later also showed larvae on press preparations. The fourth pup succumbed on April 18, twelve days after birth, and 7 immature *Toxocara*, 6 to 8 mm. in length, were recovered from the small intestine. On April 28, the last pup died and 46 immature *Toxocara* were found in the small intestine. The lungs of this pup showed lobular pneumonia with red hepatization, which was evidently due to the damage caused by the parasitic invasion.

Hookworms were present in 75 (50 per cent) of the dogs, the number varying from 1 to 190 in any one dog. *Ancylostoma caninum* was the only species encountered. *Ancylostoma braziliense*, first reported in this country by Price,<sup>19</sup> in 1926, has not been found in the vicinity of Washington, although cases of a creeping eruption, which has been shown by White and Dove<sup>24</sup> to be caused by the larvae of this parasite, have been reported from this locality and from points farther north.

Whipworms proved to be the parasite of most common occurrence, being found in 122 (81 per cent) of these dogs, the number varying from 1 to 738 in any one dog. During recent years, much discussion has been indulged in concerning the pathogenicity of whipworm infestation. Various writers have associated the presence of this parasite with certain pathological conditions such as gastro-enteritis, diarrhea, blood in the feces, and anemia. Lieb<sup>16</sup> reports on a study of 11 cases of *Trichuris* infection in man in which nervous symptoms were common to all.

His series included 1 case of cholecystitis, 5 cases of chronic colitis, and 1 case of diverticulosis. All patients had gastro-intestinal symptoms, such as marked flatulence, intestinal colic, constipation and diarrhea.

Hung<sup>13</sup> demonstrated that dog whipworms not only sew themselves into the upper mucosa but penetrate into the submucosa, causing a hyperemia and a high degree of infiltration with lymphocytes, afterwards followed by necrosis.

Particular attention was paid to the macroscopic appearance of the cecum in this series of dogs, and in nearly all cases where whipworms were present in any number there were noted a swelling and thickening of the mucosa, which was covered with a thick, tenacious exudate. A thickening at the apical extremity of the organ was especially noticeable in most of these cases. Several showed a marked inflammation of the organ and, in a few animals, ecchymoses were noted, lesions which were not associated with the effect of the anthelmintic.

One case particularly is worthy of record. This dog (1413), a three-year-old mongrel, showed a temperature before dosing of 105 degrees F. There were marked dullness and lassitude and the animal was obviously ill. There were no signs of distemper and the symptoms were so general in character that a diagnosis could not be made. The animal went through the usual experimental routine and on necropsy was found to have 35 whipworms in the cecum. The organ was extremely inflamed and hemorrhagic, with dark areas which were apparently necrotic. The remainder of the gastro-intestinal tract was normal, as were apparently all other organs. It was evident that the cecal lesions were the cause of the high temperature and the general illness exhibited by the animal.

Because of the uncertainty of anthelmintic medication, Berard and Vignard<sup>2</sup> reach the conclusion that it is necessary to resect the appendix where whipworms are present in that organ, while Miller,<sup>18</sup> Little<sup>17</sup> and others have advocated cecectomy as a cure for *Trichuris* infestation in the dog. While the advisability of a general application of such a measure may be open to doubt, it would appear that surgical interference would be indicated in cases such as the one above.

We wish to report here an unusual parasitic condition found in two dogs of this series. On necropsy, the surface of the liver of these dogs was found to contain irregular, whitish spots or areas a few millimeters in diameter. These areas were sectioned

with a safety-razor blade and examined under the microscope as press preparations. Between the interstices of the liver cells were found large numbers of eggs resembling *Capillaria ova*. The eggs were brown, lemonshaped structures, with an opercular plug at each end. The outer shell was radially striated, while the interior presented a homogeneous appearance. Average measurements were  $57\mu$  long and  $30.4\mu$  thick. These eggs correspond closely with Hall's<sup>11</sup> description of the eggs of *Hepaticola hepatica* (Bancroft, 1893) Hall, 1916, a parasite normally inhabiting the liver of rats. No worms were found in the livers. According to Hall, the female worm deposits large numbers of eggs in the liver and finally dies and disintegrates. The eggs of this parasite have been reported by Dive and Lafrenais<sup>4</sup> from the liver of a man in India, and Hall mentions the fact that eggs from a worm possibly belonging to *H. hepatica* were reported by Perroncito, in 1878, from the liver of a dog, this apparently being the only case on record from this animal.\*

The eggs were digested out of the liver and cultured. Feeding experiments are in progress in an attempt to infect dogs and rats, and will be reported on later.

*Diocotophyme renale* was not found in any of the dogs of this series. Sommer<sup>23</sup> reports the giant kidney worm in 2 per cent of Washington dogs examined by him, while Hall<sup>12</sup> found the worm in 3 per cent of 67 Detroit dogs. Hall states that *Diocotophyme renale* has been found at least 40 or 50 times in the United States and, since the publication of his paper, more cases have been recorded. The writer found two specimens of this parasite in the peritoneal cavity of a Chesapeake Bay dog at Elkton, Maryland, in 1928.

#### SUMMARY

A comparison of the incidence of parasites found in this series of dogs, with the other records from Washington dogs, is in order. Table I represents the figures from the present series, those of Hall and Foster, and of Sommer.

In the case of flukes, no comparison can be made between the present series and the two earlier series. However, this parasite appears to have become rather common in the past decade. The reason for this increased incidence is not apparent. It may be maintained that the increase is due to a greater use of fish as a

\*Since the preparation of this paper, we have received an author's undated publication in Japanese (presumably a reprint) "On the Natural Infection of *Hepaticola hepatica* in the Liver of Dogs," by Shiro Itagaki, in which is reported the finding of eggs of this parasite in 8 per cent of 65 dogs in Tokyo.



food for dogs. However, this would hardly seem probable. Three-fourths of the fish consumed in Washington is handled through the Municipal Fish Wharf. The market master informs me that the greater part of this supply comes from the lower Potomac and from Chesapeake Bay and that practically none comes from local waters. Although no statistics are available, it seems to be the opinion of large dealers that the per capita consumption of fish in Washington has decreased rather than increased in the past decade. It is also the opinion that fish have diminished in local waters and are not nearly so plentiful as formerly. Because of this and the fact that the Washington waterfront at the present time is so built up with wharfs, docks and retaining walls, permitting dogs little opportunity for foraging along the banks of

TABLE I—Summary of reports showing incidence of internal parasites in dogs at Washington, D. C.

PARASITE	PRESENT SERIES (1929) 150 DOGS (%)	HALL AND FOSTER (1917) 76 DOGS (%)	SOMMER (1896) 50 DOGS (%)
Trematodes	5	0	0
Cestodes			
Dipylidium spp.	68	51	44
Taenia spp.	8.7	8	14
Nematodes			
Ascarids	40	67	28
Hookworms	50	71	56
Whipworms	81	57	70

local streams, it would not seem likely that dogs generally secure the infection through scavenging along the water front. Furthermore, it is not likely with the present cost of this article of food, that more fish is fed to dogs now than formerly. In view of these facts, we are unable to offer any explanation for the apparent increase in the incidence of flukes in Washington dogs.

There has been a decided upward trend in the incidence of tapeworms of the genus *Dipylidium*. As in the case of flukes, we are unable to assign any good reason for this increase. Dogs are no doubt better cared for now than formerly. It would not seem reasonable to assume that fleas and lice, the intermediate hosts of this tapeworm, are more common at the present time. Under city conditions, dogs assume the status of household pets and more attention is usually paid to the control of external parasites.

Tapeworms of the genus *Taenia* apparently took a decided drop from 1896 to 1917 but have since remained almost stationary. This is to be expected from the life cycle of the worms, the period from 1896 to 1917 having brought about a definite change and improvement in the disposal of slaughter-house offal and in general sanitary conditions with respect to the disposition of animal viscera.

The incidence of ascarids more than doubled from 1896 to 1917, but has dropped considerably since the latter date. Hookworm prevalence also increased from 1896 to 1917 but has since definitely declined. Since the latter date, reliable anthelmintics have been provided for the treatment of these parasites and it is possible that an increased use of these treatments has been responsible for the decline in the incidence of these two parasites.

Whipworms appear to have declined from 1896 to 1917 and then to have increased 24 per cent in the period from 1917 to 1929. Here again, we are unable to assign any reason for the irregularity in the prevalence of this parasite. The whipworm was the parasite of most frequent occurrence in this series of dogs, a low-grade inflammation of the cecum and occasionally the upper colon often being associated with its presence. In one animal a severe inflammatory condition of the cecum apparently accounted for the illness detected on clinical examination. These facts would indicate that the parasite is not without pathological importance.

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### Propaganda in Reverse Gear

An Elgin, Ill., reader writes to say he thinks a news item in the *Drovers Journal*, which states that blood tests of several persons afflicted with a strange illness indicated the cause to be drinking milk from cows having aborted, is propaganda of a veterinarians' association. The subscriber is welcome to his conclusions, but if he is any better in scenting malicious propaganda than the general run of seasoned newspaper men he can rate himself a "wiz." There is no more skeptical individual on earth than the experienced news editor. There are times when he suffers a bit of softness of heart, and then he lets some item like the one referred to go into the paper. But certainly no reputable veterinarians' organization would sponsor anything disreputable. It would quickly react on the profession, and the collective effort of veterinarians for some years has been vigorously trained to raise the profession to the highest standards possible.

Veterinarians have their faults, but they have their ethics, also, and to blame them for connivance in a story like the one cited would be as foolish as to charge them as authors of all the stories of animal diseases. Might as well say the world is flat.

Editorial in (Chicago) *Daily Drovers Journal*



Giant Geyser, Yellowstone National Park

## NOTES ON CESTODE LARVAE\*

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### PART I. THE TAENIA TAENIAEFORMIS (BATSCH) FOUND IN THE FOX SQUIRREL

The larval *Taenia taeniaeformis*, which is more commonly known as the *Cysticercus fasciolaris* Rudolphi, is known to occur in the liver of several different species of mammals.

In the Rodentia this cysticercus has been reported in the European wood mouse, *Apodemus sylvaticus* (Linnaeus); European water rat, *Arvicola scherman* (Shaw); "Lemmus terrestris"; European field mouse, *Microtus arvalis* (Pallas); common house mouse, *Mus musculus* Linnaeus; muskrat, *Ondatra zibethicus* (Linnaeus); Norway or brown rat, *Rattus norvegicus* (Erxleben); black rat, *Rattus rattus* (Linnaeus); and the roof rat, *Rattus rattus alexandrinus* (Geoffroy). In the order Chiroptera it was encountered in one species, the European big-eared bat, *Plecotus auritus* (Linnaeus). It has also been reported from the liver of one of the Insectivora, the European mole, *Talpa europaea* Linnaeus.

On November 23, 1928, the writer received a specimen of liver from a Western fox squirrel, *Sciurus niger rufiventer* (Geoffroy). The squirrel from which the liver originated was killed close to a group of farm buildings located about two miles south of Lincoln, Nebraska.

The liver was examined and found to contain not less than twenty globular cysts, all of which were exposed to the surface of the organ. They measured from 4.5 to 7.0 mm. in diameter. Within these cysts were found coiled cestode larvae which measured 38 mm. in length and 3 mm. in width. The scolex of the larva was rounded and measured 1.5 mm. in diameter. There were 4 prominent, unarmed suckers, which measured from 384 to 390 microns in diameter. They were attached to the head at an angle pointing forward and outward. The rostellum (fig. 1) is short, measures 1.07 mm. in diameter, and is armed with a

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double crown of hooklets, 34 in number. The large hooks measure 400 microns in length. The blade has a slight curvature, the handle is long and has a tendency to turn dorsad at its distal extremity. The small hooks measure 256 microns in length. The blades have a somewhat stronger curvature; the handles are straight and have a knob on their distal extremities. At the posterior end of the scolex is attached a distinctly formed chain

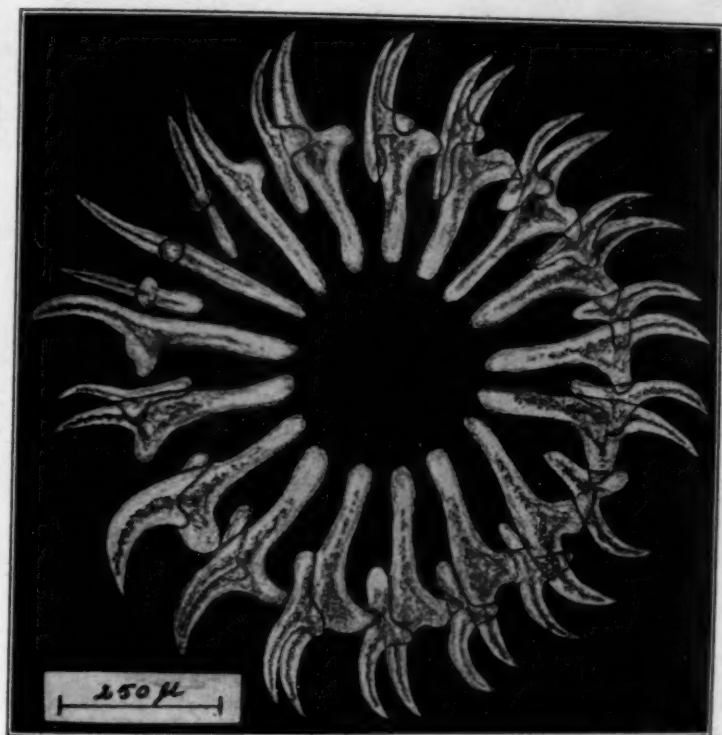


FIG. 1. Rostellum of the *Taenia taeniaeformis* (Batsch) larva from the liver of the western fox squirrel.

of short, wide, proglottids, which show no evidence of genital organs.

It is apparent from the morphologic characteristics that these cysticerci were encysted larvae of the *Taenia taeniaeformis* (Batsch) and this is the first time that they were found to be encysted in the liver of the Western fox squirrel, *Sciurus niger rufiventer* (Geoffroy).

PART II. AN UNUSUAL CASE OF *CYSTICERCUS FASCIOLARIS*  
*RUDOLPHI* IN THE COMMON HOUSE MOUSE  
(*MUS MUSCULUS LINNAEUS*)

Recently (September 23, 1928), the writer found the liver of a house mouse to be very heavily infested with the *Cysticercus fasciolaris*, the larval stage of the common cat tapeworm, *Taenia taeniaeformis* (Batsch). This mouse was mature and measured 8 cm. (from tip of nose to base of tail) in length. It appeared to be in a fair state of health, except for a much distended abdomen, which caused the animal to move about more slowly than normal. There was also some evidence of emaciation.

The liver containing the cysts was globular in shape and measured 4 cm. in diameter. The parenchyma of this organ was almost completely destroyed as a result of pressure atrophy.

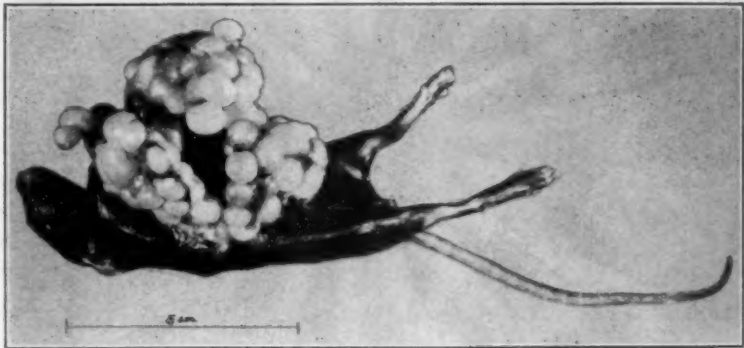


FIG. 2. The common house mouse, showing a heavy infestation of *Cysticercus fasciolaris* Rud. of the liver.

There were small quantities of liver tissue scattered throughout the cyst mass. The connective tissue of the liver appeared to act as a sort of framework for the cysticerci. The lobes of the liver, part of which are shown in the photograph (fig. 2), harbor cysts practically to their full capacity and it would be difficult to conceive how many more larvae could have found room to encyst themselves. There were not less than 200 larvae encysted in the liver of this mouse. The cysts were globular and ovoid in shape; they measured from 4 to 9 mm. in diameter, the majority measuring 6 mm. or more in diameter. The larvae were studied and compared in structure to those described in part I of this paper.

The presence of a few *C. fasciolaris* in the liver of rats and mice is not at all uncommon in nature, but heavy infestations with these larvae are not frequent. Smith<sup>1</sup> mentions a case in a musk-

rat where several hundred of these larvae were encysted in the liver. Hopwood<sup>2</sup> reports a case in a brown rat, where there were a total of 256 encysted larvae visible on the liver surface and many more may have been embedded in the tissue and not visible on the surface. Miller and Dawley<sup>3</sup> experimentally produced as many as 6000 cysts in one white rat.



FIG. 3. *Coenurus serialis* Gervais from the peritoneal cavity of a western fox squirrel.

PART III. THE MULTICEPS SERIALIS (GERVAIS) LARVAE IN THE  
PERITONEAL CAVITY OF THE WESTERN FOX SQUIRREL,  
*SCIURUS NIGER RUFIVENTER* (GEOFFROY)

On December 31, 1928, the writer's attention was called to a Western fox squirrel which was killed about fifteen miles east of Lincoln, Nebraska. This animal had a very much distended

abdomen and upon opening the peritoneal cavity it was found to contain large masses of cysts, many of them free in the cavity while others were attached to the mesentery. These cysts, a small portion of which were photographed (fig. 3), were quite unusual in appearance in that there was a rather extensive budding from the mother and daughter vesicles. These vesicles also showed many small fimbriated processes, both on the external

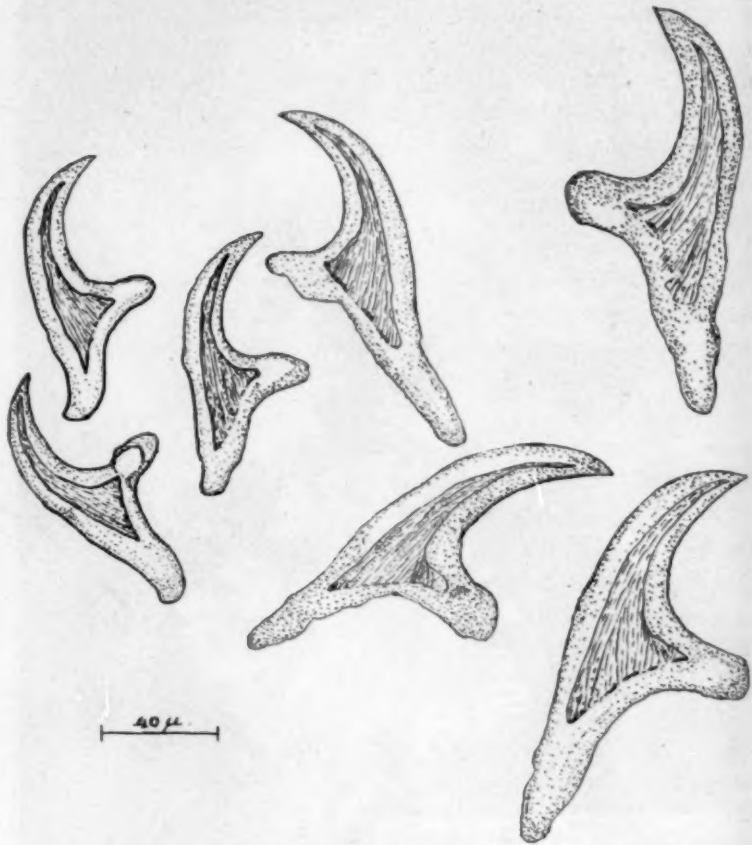


FIG. 4. Large and small hooks of a *Multiceps serialis* (Gervais) larva from a coenurus of a western fox squirrel.

and internal surface of the bladders. The cause of this extensive budding may probably be due to an exceptionally active multiplication of the primary vesicles. The location also may be a factor responsible for the rapid multiplication, as Hall<sup>4</sup> reports a case in a rabbit where a pint of cysts was taken from the peritoneal cavity. There were a number of scolices present in some of the bladders while others appeared to be sterile. The head is spheri-



cal when viewed from the side and somewhat quadrangular when viewed in the direction of its longitudinal axis. It has a diameter of 1.4 mm. The rostellum is about 340 microns in diameter, has a double crown of hooks, 28 in number. The large hooks (fig. 4) measure 128 to 139 microns in length. The blades are moderately curved; the handle is slightly sinuous in outline and frequently tapering toward the distal extremity. There is also a tendency of the distal extremity to turn dorsad. The small hooks are 93 to 98 microns in length. The curvature of the blade is moderate to strong. The handle is short, thick and curved dorsally. The guard is oval to knob-like, with a median ventral groove. The suckers are relatively close together and large, the muscular bulb measuring 296 to 311 microns in diameter. There was also a distinct neck.

The scolices of these cysts were compared with heads of a *Coenurus serialis* Gervais of a domestic rabbit, *Oryctolagus cuniculus domesticus* (Linnaeus), and with those of a *C. serialis* found in the intermuscular and subcutaneous connective tissue of a Great Plains jack rabbit, *Lepus californicus melanotis* (Mearns), which was killed in the vicinity of Lincoln, Nebraska. The scolices of the coenurus from the squirrel were morphologically identical with those from the domestic rabbit and jack rabbit.

The *C. serialis* has been reported in other species of squirrels. The first case of this coenurus seems to be the one mentioned by Cobbold,<sup>5</sup> which occurred in an American squirrel, in England, probably the *Sciurus niger neglectus* Gray (= *S. vulpinus*) (Hall, 1911). Hall<sup>6</sup> mentions that Cagny, in 1882, recorded a second case from a European squirrel, *Sciurus vulgaris* Linnaeus, in France. Hall, in this same paper, describes a case from a gray squirrel, *Sciurus carolinensis* Gmelin, in which he produced the larval *M. serialis* by feeding proglottids of the adult worm from a dog. Meggit<sup>7</sup> includes the *Sciurus rufiventer* as a secondary host of the *M. serialis* and cites Hall as reporting its presence in this species, but upon examining the article by Hall,<sup>8</sup> the writer failed to find this species of squirrel mentioned as a host for the *C. serialis*. Therefore, in all probability, the case here described by the writer is the first one to be recorded in the *Sciurus niger rufiventer* (Geoffroy).

The *C. serialis* has been reported also in a number of other mammals. The most common ones are the various species of rabbits and hares. The ones other than those mentioned above are the *Lepus callotis* Wagler, *Lepus californicus californicus*

Gray, *L. c. deserticola* (Mearns), *L. c. texianus* (Waterhouse), *L. c. wallawalla* (Merriam), *L. townsendii companius* Hollister, *L. europaeus* Pallas, *L. timidus* Linnaeus, *Oryctolagus cuniculus* (Linnaeus), *Sylvilagus floridanus mearnsi* (Allen), *Sylvilagus palustris* (Bachman), and *Myocastor coypus*.

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## 28-Hour Law Violations Increase

For failure to observe the requirements of the 28-hour law, which provides for the proper feeding, watering and resting of live stock in transit from one state to another, violators have been paying penalties aggregating \$27,000 or more in recent years, the U. S. Bureau of Animal Industry recently announced. Compliance with the law rather than penalties is the goal sought, the Bureau points out in reminding carriers that violations last year totaled 415, which is a material increase over 284 cases reported for prosecution the previous year.

The law requires the unloading of animals for feed, water and rest at the end of each 28-hour period during transit, except when shippers authorize an 8-hour extension. Its essential purpose is two-fold: to insure humane treatment of animals and to protect shippers from unnecessary losses. Carriers have shown a general desire to cooperate with the government officials and with shippers, and some carriers have voluntarily provided yards with concrete floors, shelter, and improved facilities for feeding and watering. Violations are usually the result of lack of interest on the part of railroad employees. For the information of persons concerned with the shipment of live stock, the U. S. Department of Agriculture has issued Department Bulletin 589-D, "The 28-Hour Law Regulating the Interstate Transportation of Live-stock." The bulletin contains the provisions of the law and explains them in detail. Copies may be obtained on application to the U. S. Department of Agriculture, Washington, D. C.

# THE INCIDENCE OF GOITER AND OTHER LESIONS OF THE THYROID GLAND IN DOGS OF SOUTHERN MINNESOTA

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Dogs, because of their dietary requirements and cohabitation with man, usually live on approximately the same type of food as their owners, particularly dogs in the city, which do not have the same opportunity to forage for themselves as dogs on a farm. Therefore, the dog should offer a good index as to the frequency of certain organic changes occurring in man in which diet is a significant factor.

In this study we sought to learn the incidence of goiter and other types of thyroid lesions in dogs of southern Minnesota. All of the thyroid glands in this series were obtained from dogs which came to necropsy as a routine.

In our series, 234 thyroid glands were studied; the data in regard to sex, body weight, and the condition and weight of the thyroid gland were determined at the time of necropsy. The age of each dog was estimated and the breed was determined by the predominating breed characteristic. The ages ranged from approximately three months to very aged. The dogs were grouped as follows: All dogs without definite characteristics of breed were classified as mongrels; the others were classified as Collies, Airedales and Bull Terriers, police dogs, Bulldogs, Poodles, small terriers (mostly Fox Terriers), and a group of miscellaneous dogs which comprised eight distinct breeds. In the entire series there were fifty-three mongrels, fifty Collies, forty-nine small terriers, twenty-five Poodles, eighteen Airedales and Bull Terriers, seventeen police dogs, sixteen miscellaneous dogs, and six Bulldogs.

Of the 234 thyroid glands studied, fifty-four (23 per cent) were classified as goitrous. Of these, forty-four were abnormally

enlarged, according to the criterion of Marine; the ten others were selected because of pathologic changes observed microscopically. In the series of fifty-four cases the goitrous condition

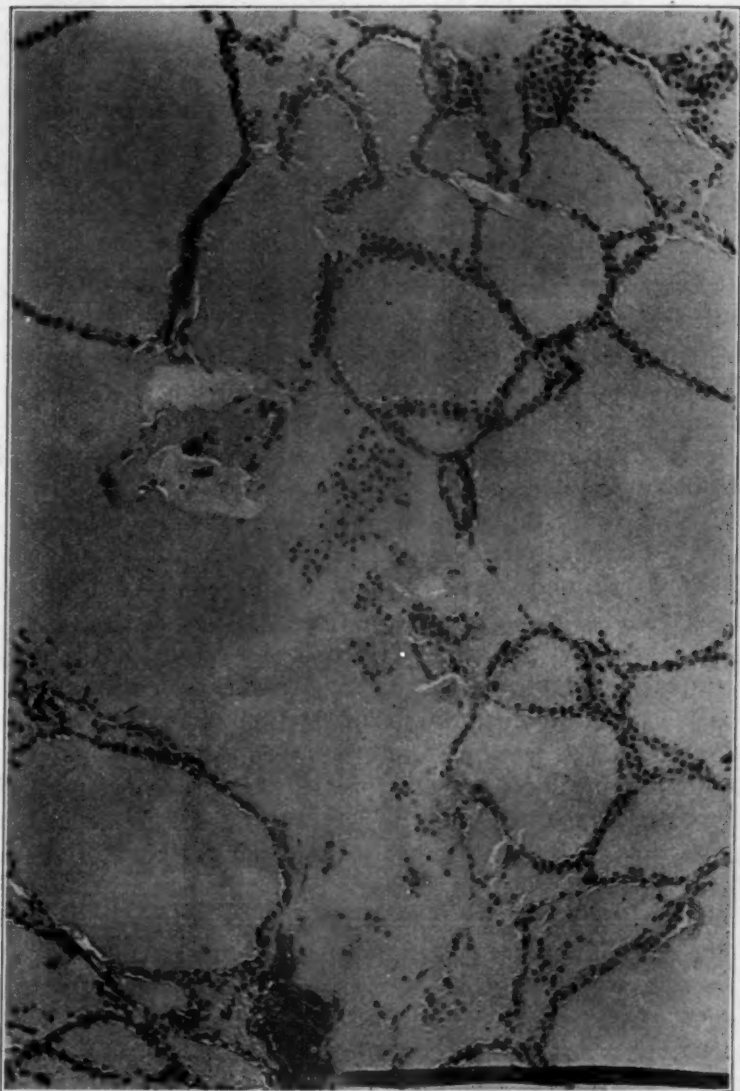


FIG. 1. Colloid goiter. An excessive amount of colloid and coalescing of acini may be noted. The cells lining the acini are flat.  $\times 150$ .

in thirty was characterized by an abnormal amount of colloid, in fourteen by fetal and colloid adenomas, in six by marked hyperplasia, in two by carcinoma, and in two by old thyroiditis with



marked fibrosis. The largest thyroid gland, as judged by its weight in relation to body weight, was that of a markedly hyperplastic gland. It weighed 26.2 gm., and represented 21.8 gm. of

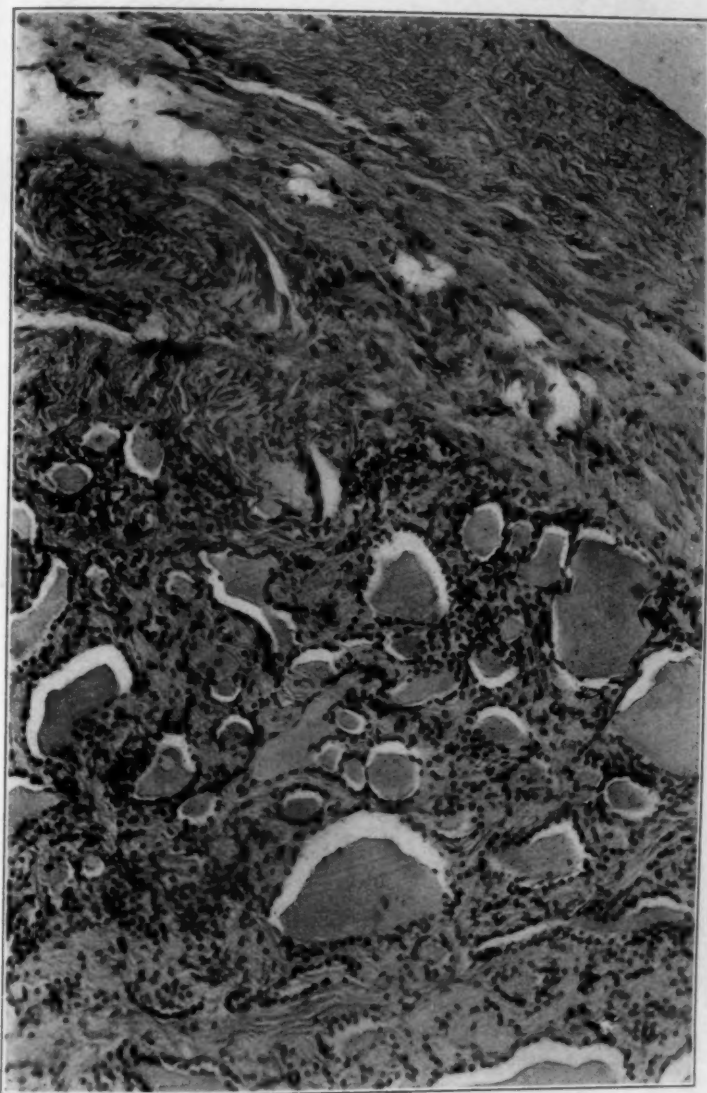


FIG. 2. Fetal and colloid adenoma. A well-defined capsule, hyperplasia of the acinar cells and cellular areas may be noted. The acini contain colloid.  $\times 150$ .

thyroid gland for each kilogram of body weight. The lowest weight was observed in a gland which contained a degenerating fibroadenoma. This gland weighed 0.4 gm. and represented 0.02

gm. of gland for each kilogram of body weight. Both of these glands occurred in puppies aged less than six months.

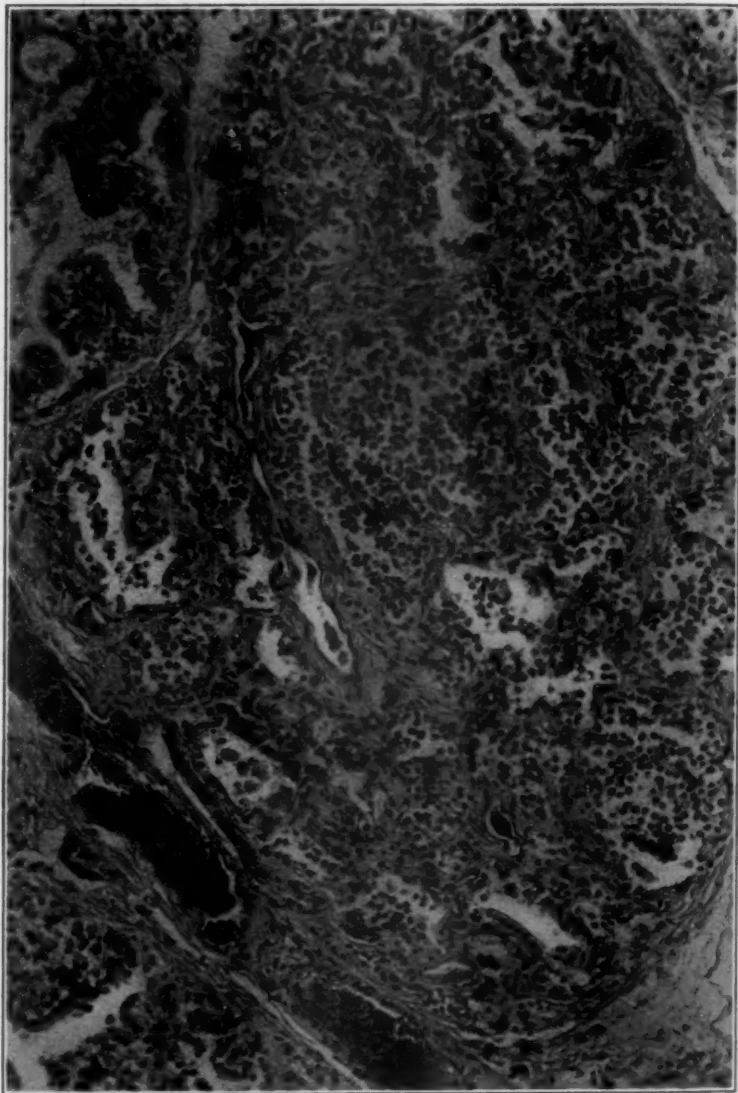


FIG. 3. Markedly hyperplastic glands. These glands show marked hypertrophy and hyperplasia throughout. There is very little, if any, colloid present.  $\times 150$ .

#### COLLOID GOITER

Thirty (55.5 per cent) of the goiters studied were colloid goiters. The most marked histologic feature of these glands was the

immense amount of colloid as compared to the cellular elements. There was total absence of hyperplasia. All cells lining the acini were flat, and in many areas the walls of the acini could be seen

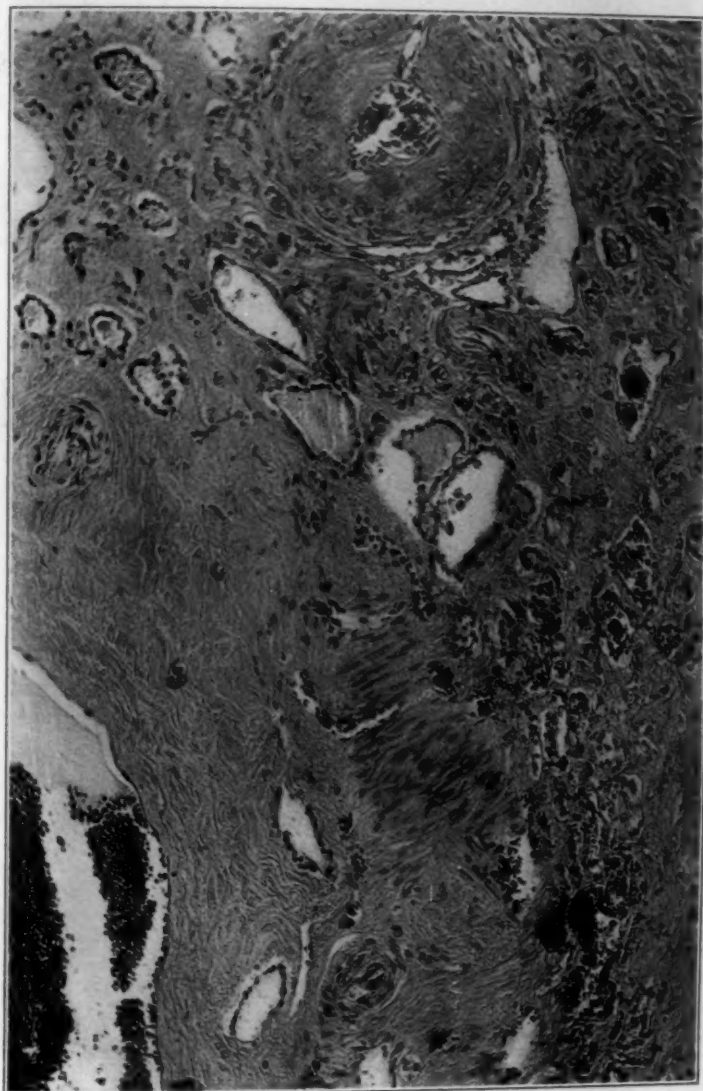


FIG. 4. Old thyroiditis with marked fibrosis. A thickened capsule, perivascular infiltration, and general fibrosis may be noted.  $\times 150$ .

to be broken down so as to cause coalescence of acini. In some glands the walls of the vessel appeared to be destroyed by the colloid, the blood coming in almost direct contact with the

colloid. The largest of the glands weighed 4.8 gm. and the smallest 0.17 gm. for each kilogram of body weight (fig. 1).

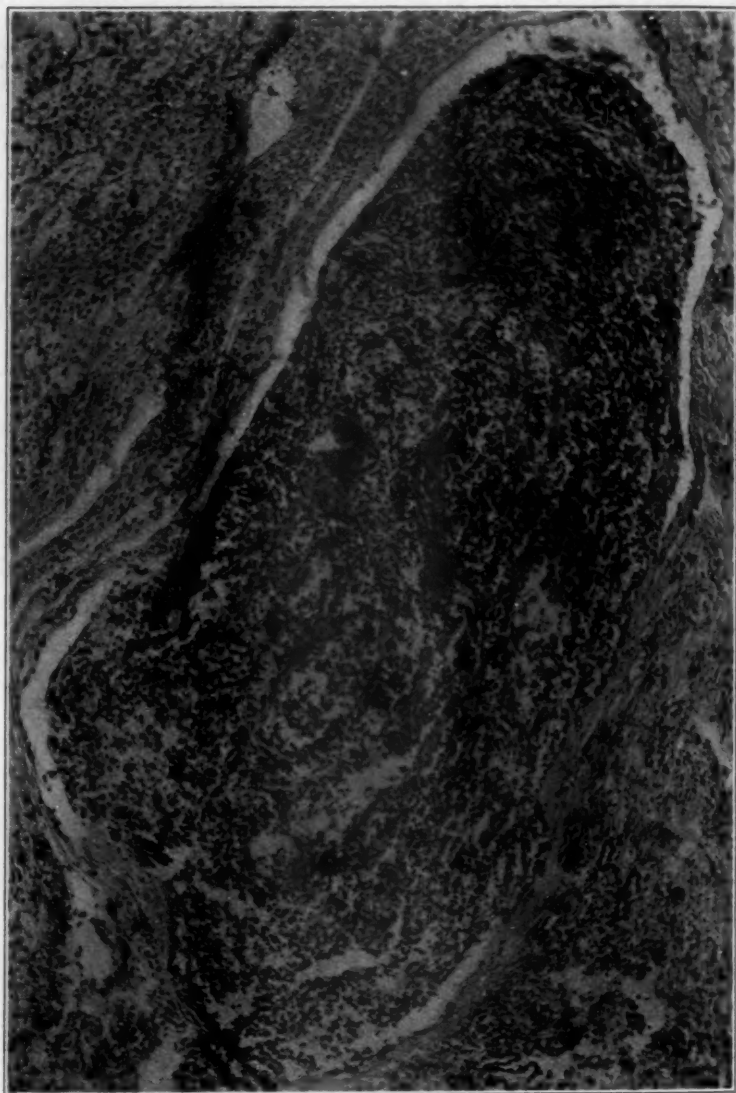


FIG. 5. Carcinoma of the thyroid gland. The carcinoma cells may be seen growing within a vessel, almost completely obliterating it.  $\times 100$ .

#### FETAL AND COLLOID ADENOMAS

Fourteen (26 per cent) of the goiters contained fetal and colloid adenomas. All glands which showed encapsulated adenomas and glands which showed intra-adenomatous or extra-adenomatous



hypertrophy were included in this group. Two of the glands showed marked degeneration and fibrosis. The largest gland in the group weighed 4.6 gm. and the smallest 0.02 gm. for each kilogram of body weight (fig. 2).

#### MARKED HYPERPLASIA

In six goiters (11 per cent) there was marked hyperplasia. The most noticeable characteristic of the gland was the marked hypertrophy and hyperplasia. Practically no colloid was present; in fact, there were only a few acini with the usual configuration. In their place were acini crowded with round or oval cells in a large degree. When colloid was present in the acini the lining cells were of the tall columnar type, so commonly seen in thyroid glands of the hypertrophic type in man (fig. 3).

#### OLD THYROIDITIS

In the two cases in this group the glands were very small, and were firm in consistence. The largest weighed 0.22 gm. and the smallest 0.08 gm. for each kilogram of body weight. The glands showed marked thickening of the capsule and walls of the vessels, and marked fibrous infiltration (fig. 4).

#### CARCINOMA

There were two cases in this group, which gives an incidence of 0.08 per cent of all the thyroid glands, and 3.7 per cent of the goiters. In both cases metastasis to other organs was demonstrated. In one animal the thyroid gland weighed 21.2 gm., or 2.8 gm. for each kilogram of body weight. This dog had metastatic nodules in the lungs, pleura, heart and kidneys. The gland in the other case weighed 74.0 gm. This was equal to 4.8 gm. of thyroid gland for each kilogram of body weight. The right lobe of the gland was degenerated and calcified. The carcinoma in this lobe involved the first rib on the right. There were no other metastatic nodules (fig. 5).

#### COMMENT

The highest incidence of goiter was noted in police dogs, 35.3 per cent, and the lowest incidence was in miscellaneous breeds (table I). There was no great predominance in any of the groups. The incidence of colloid goiter was highest in the mongrels, Collies, police dogs, and Bulldogs. All but the Bulldogs were largely raised on farms in Minnesota. The highest incidence of adenomas, on the other hand, occurred in Airedales and Bull

Terriers, Poodles, small terriers, and the miscellaneous breeds. Most dogs of these breeds are more commonly seen in the city, especially the Poodles, Airedales and Bull Terriers, and the miscellaneous group. This may be of only slight significance, but one must consider the fact that the dog raised on a farm, during the summer months in particular, receives very little food which is shipped in, while the dog raised in the city, like his master, eats largely of imported foods.

Seventeen per cent of colloid goiters, 21 per cent of fetal and colloid adenomas, and 17 per cent of markedly hyperplastic glands occurred in dogs less than one year of age. This would indicate that the factor of age is no greater in one type of gland than the other. However, the two cases of old thyroiditis with marked fibrosis and the two cases of carcinoma occurred in aged dogs. The extremely high incidence of carcinoma of the thyroid

TABLE I—*The incidence and type of goiter for various breeds*

BREED	DOGS	GOITER		TOTAL (PER CENT)
		COLLOID (PER CENT)	ADENOMAS (PER CENT)	
Mongrels.....	53	19.0	7.4	26.4
Collies.....	50	16.0	10.0	26.0
Small terriers.....	49	10.2	10.2	20.4
Poodles.....	25	8.0	12.0	20.0
Airedales and Bull Terriers....	18	11.1	16.6	27.7
Police dogs.....	17	23.5	11.8	35.3
Miscellaneous dogs.....	16		13.3	13.3
Bulldogs.....	6	16.6		16.6

gland in this series indicates that malignant neoplasm of the gland is common in the dog. This observation has been noted by other investigators. The dogs in both cases studied by us were in excellent condition at the time of death and were not killed because of the lesions of the thyroid gland.

Coller<sup>1</sup> noted that 80 per cent of a series of patients that came to necropsy showed adenomatous goiter; only 15 per cent of these were of the exophthalmic type. Pemberton<sup>5</sup> stated that 2.7 per cent of all endemic goiters observed by him were malignant. Fox<sup>2</sup> studied sixty cases of disease of the thyroid gland in captive wild mammals and birds, 39 per cent of which occurred in carnivora. Marine<sup>3</sup> made a comprehensive study of the thyroid glands of dogs in and near Cleveland; he found that 90 per cent showed histologic changes. He stated that any thyroid gland in excess of 0.3 mg. for each kilogram of body weight is abnormal. Mac-

Callum found, in Baltimore, that only about 7 per cent of thyroid glands of dogs showed histologic changes. In areas of Switzerland, as many as 40 per cent of dogs past middle age are affected with goiter, generally of the cancerous type.<sup>4</sup>

#### SUMMARY

A series of 234 thyroid glands, obtained from dogs of southern Minnesota, were studied macroscopically and histologically. Fifty-four of these were classified as goiter; forty-four were enlarged grossly. In the series of goiters were thirty colloid glands, fourteen fetal and colloid adenomas, six markedly hyperplastic glands, two cases of old thyroiditis with marked fibrosis, and two cases of carcinoma.

The largest thyroid gland, as judged by weight of gland in relation to body weight, was classified as markedly hyperplastic. It weighed 26.2 gm. and represented 21.8 gm. of gland for each kilogram of body weight.

The highest incidence of goiter was noted in police dogs.

Seventeen per cent of colloid goiters, 21 per cent of fetal and colloid adenomas, and 17.0 per cent of markedly hyperplastic glands occurred in dogs less than one year of age. The two cases of old thyroiditis with marked fibrosis and the two cases of carcinoma occurred in aged dogs.

The incidence of carcinoma was 0.08 per cent for all the thyroid glands and 3.7 per cent for the goiters.

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<sup>3</sup>Marine, David: On the occurrence and physiological nature of glandular hyperplasia of the thyroid, dog and sheep, together with remarks on important clinical (human) problems. Bul. Johns Hopkins Hosp., xviii (1907), pp. 359-364.  
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#### Bang Disease in Argentina

In the April 24, 1930, issue of *La Semana Medica* (Buenos Aires), Dr. Nicholas V. D'Alessandro reports having found *Alcaligines abortus* (*Br. abortus*) in the fourth stomach of an aborted calf fetus, from the province of Buenos Aires. It appears from the article that this is the first instance of the demonstration of Bang disease of cattle in Argentina.

N. S. M.

## PROGRESS IN VETERINARY EDUCATION\*

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That part of medical science which concerns itself primarily with the diseases of animals other than the genus "homo" has reached a critical stage in its development. It is not necessary or desirable to offer a lengthy historical discussion or to attempt to make a prophecy reaching far into the future. There are, however, a few things which appear so obvious that they should be mentioned at this time in order that those interested in the medical sciences may give them such consideration as they deserve.

In the past the field of medicine has been quite sharply divided into distinct branches or fields, chief among them being, as now, human medicine. In this division veterinary medicine has long been regarded, especially by the laity, as something entirely distinct and different from anything else among the professions or sciences. This conception is quite natural and arises from two principal causes, both heritages of the past. One of these, which has gradually diminished since the development of the basic sciences and now seems destined to disappear altogether, is the old belief that humans and animals had little in common from the standpoint of disease. Stated in another way, it was thought that disease in an animal was an entirely different process than in man, who was regarded as a spiritual entity and more subject to the will and wrath of a divine power. The other cause for the differentiation lies in the history of our educational development. Speaking from the standpoint of our own nation, the development of education in human and veterinary medicine has many similarities, but I wish to emphasize at this time as more significant, perhaps, the decided dissimilarities. These present the principal problems in veterinary education today.

Both human and veterinary medicine suffered from the rapid development of a new country, beginning before our fundamental sciences were well established and creating a sharp demand for professional service previous to our having well established schools or educational policies. Thriving private schools, of an essentially "practical" or "clinical" type, developed quite

\*Presented before Section N (Medical Sciences), American Association for the Advancement of Science, Des Moines, Iowa, December 31, 1929.



rapidly in both fields. These schools graduated some men who developed into creditable professional men, but no profession can build a substantial structure on such an uncertain foundation and expect it to stand the test of critical public demands in a country with such a high average degree of intelligence and education as we have in the United States. These schools, fortunately, have either closed their doors or have become parts of state-supported or endowed institutions. This means that commercialism has been quite largely eliminated from the field of medical education, both human and veterinary. The greatest problem facing those responsible for veterinary education today grows out of an important difference in the manner in which the two professions, as represented by their educational institutions, originated in the United States. It is, in fact, a difference in parentage, and whether or not we can overcome these hereditary influences is a vital question.

#### HUMAN MEDICINE AND MEDICAL COLLEGES

Education in human medicine from the time it was regarded seriously by leaders in higher education has been standing largely on its own feet, chiefly in our larger state universities and richly endowed institutions. Colleges of medicine have had their troubles, naturally, but medical education was always considered of university grade. They were not handicapped because of being considered dependencies of some other branch of education. They grew out of themselves. Medical colleges had their own fundamental medical sciences and could develop them along with the men to whom they were of primary interest. There was no difficulty, therefore, in keeping men with a scientific attitude of mind in the field of medicine or to interest young men scientifically inclined. The parentage of our medical colleges today is the medical profession itself. The profession is the product of the colleges. In this connection let it be said to its credit that the medical profession "washed its own linen" and its educational requirements are now above that of any other profession. The M. D. degree of today represents more training than any other earned degree.

Veterinary education, as represented by colleges now existing, presents a somewhat different history and in all but one case grew from a chair of veterinary medicine in an agricultural college where it was deemed wise to give agricultural students some lectures in animal hygiene and diseases. In those states

where the "veterinary professor" was a dominating personality with aggressive tendencies, his duties in the course of a few years required some assistance and in due course of time a veterinary division or college was organized and was bidding for students. In some cases such schools remained a part of the agricultural division of the institution for some years and it is not certain that they are all entirely independent even today. In other cases the old influence is still distinctly apparent and such schools, instead of delving into the medical sciences, where the solution of our problems lies, are still too chiefly concerned with the art of the profession and the crumbs that may fall from the table of agriculture. The significant fact is that veterinary education as we have it today did not grow out of the veterinary profession but was delivered largely from the womb of agriculture.

#### AGRICULTURE AND VETERINARY MEDICINE

It is very difficult to discuss some matters in this connection without being misunderstood, but the significance of the question forces us to its consideration even at the risk of some unwarranted criticism. It is farthest from my mind to find fault with education in agriculture, but I am extremely anxious about proper development of veterinary education. Agriculture from an educational and scientific standpoint has little or nothing to offer veterinary medicine. Just because the application of veterinary education is highly significant to agriculture is no indication that agriculture can make any scientific contribution to this profession. Incidentally, veterinary medicine is also applied in public health and some other fields. Scientific agriculture is one of our most recent developments in the educational field and presents great opportunities from the standpoint of scientific development.

Development of veterinary education, however, does not lie in the same direction. Neither are our problems the same. Young men with the type of training suggested would be of immensely greater service in all branches of veterinary service. In the end, agriculture would be much better served by a scientifically well-grounded profession. Medical colleges are not training dietitians *per se*, neither are home economics colleges attempting to train physicians. By the same token why should there be any different relationship between colleges teaching the breeding and feeding of animals and those concerned with veterinary medicine. It requires but little thought to reach the conclusion that the

solution of future educational problems properly coming before the veterinary profession lies in the field of medical sciences. Problems in the entire field of medicine are fundamentally the same and must be solved by the application of the same fundamental sciences. The practice of medicine in any of its branches was at one time very largely an art. With the discoveries in pathology, bacteriology, serum therapy, and so forth, it became a science and this has developed until the scientific aspects far overshadow the art.

The successful veterinary college of the future must have a plan for its development which is based directly on medical sciences and those fundamental thereto. It must forget the old family tree and take root in new soil. It must form new alliances. Its product must be conceived in an atmosphere charged with scientific thought and imbued with a spirit of research and professional service.

#### HIGHER STANDARDS REQUIRED

The question is whether veterinary medicine can do what human medicine did, much to its credit, *i. e.*, exact personal and mental qualities on the part of those who apply for entrance which will place the profession on a plane for the largest service to mankind. Theoretically, there is no reason why this cannot be done, but it involves much which cannot be detailed in this short discussion. In many colleges this would involve standards of entrance, scholarship and teaching above the level now required by the institutions of which they are a part. The tendency on the part of many executives in the interest of uniformity—to reduce all the departments or divisions of their institutions to a common denominator—will prove a great handicap. All the work should be of strictly university grade and much would compare with what is now called graduate work in some institutions. To put the question direct—Can the veterinary colleges, with their present administration and environment, maintain the faculty and exact scholastic standards on the part of students which would accomplish the desired end?

The recruiting of staff members is at present one of the most difficult problems the administrators of veterinary colleges have to meet. The men we need are those who have had a good general education of college grade in addition to their training in veterinary medicine. Such training with good personality and proper attitude of mind, while highly desirable, is almost impossible

to secure at the present time. In some of our more fundamental branches, men with training in medical schools would be highly desirable. Men with medical training, however, have not taken the same interest in the educational branches of veterinary medicine they have shown in the research lines. We need the sympathetic assistance of human medicine in the educational as well as the research part of our professional work. It should be easier for properly trained men to transfer from work in one branch of the medical sciences to another. Undoubtedly this will come in time with the increased educational requirements on the part of the veterinary colleges. The bringing in of men for veterinary faculties from foreign countries has been suggested by some as a partial solution of this problem. This, however, has some limitations. Unless a foreign professor is quite young and very adaptable, the adjustment becomes very difficult. The attitude of mind of our American young people, I judge, is quite different from that of the young men in Europe, and too often the foreign-trained men, although competent in every other direction, attempt to revolutionize our administrative work and model it after the European. To this we have not consented.

#### PURE SCIENCE AND VETERINARY MEDICINE

Another suggestion that more men should be brought from the field of pure science to work in the field of veterinary education has not met with ready approval. To an extent the attitude of science toward veterinary medicine has been much the same as it has been toward agriculture, in part probably due to the fact that veterinary medicine and agriculture were more or less closely linked in previous years. The specialist in science is not infrequently narrow in his training and is not sufficiently in sympathy with other, and often closely related, branches. The danger, which may be more imaginary than real, is that the scientist would remove his work so far from the field of its application that the usefulness of the profession would be seriously hampered. The men in the field of sciences do not seem to have had the vision and appreciation of what the field and function of veterinary medicine really is. In viewing the various possibilities, therefore, of recruiting our faculty personnel, it seems that human medicine would offer the best solution if the veterinary colleges are unable to produce the men.

In conclusion I wish to say that I have attempted to outline only very briefly a few of the most pressing needs in veterinary



education at the present time. First, a new understanding of our duties and responsibilities; second, a new realization of the field in which the solution of our problem lies; third, a need for increased educational standards for both faculty and students; and fourth, the possibility of securing adequate men for institutional work, indicating the sources from which they may be drawn.

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### **Regular Broadcasting by Allied Laboratories**

On May 1, the Allied Laboratories, Inc. initiated a program of radio broadcasting from two well-known stations—WLS, at Chicago, and WOW, at Omaha. It is believed that these two stations reach a larger number of rural listeners than any other stations in America. The messages broadcast by the Allied Laboratories are tied in with the weather reports. Undoubtedly farmers are more deeply interested in the weather reports than any other radio feature, and the knowledge of this fact prompted the officials of the Allied Laboratories to make the necessary arrangements for tying in their broadcasts with the weather reports.

On weekdays, station WLS broadcasts these messages at 7:15 and 8:20 a. m., and at 12:30 and 6:28 p. m. Station WOW has no fixed schedule but three broadcasts are made every day, morning, noon and night. The object of this radio program is to give farmers and breeders a better understanding of the services which veterinarians are prepared to render the live stock industry. In addition, outbreaks of infectious diseases will be reported, so that owners of live stock in any community may know whenever an animal plague is threatening. In addition to the regular daily broadcasts, a special message, in behalf of the veterinary profession, by Dr. E. A. Cahill, president of Allied Laboratories, was sent over station WLS, on May 19.

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### **Rabies Quarantines in Michigan**

During the last two weeks in April, it became necessary for Dr. C. H. Clark, state veterinarian of Michigan, to place rabies quarantines on five counties in southern Michigan. These counties are Kalamazoo, Calhoun, Branch, Ingham and Monroe. A sharp increase in the number of cases of rabies reported from this territory made the quarantine necessary.

## THE TOXICITY OF THALLIUM SULPHATE FOR SHEEP\*

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Thallium sulphate has been used in commercial rat poisons in this country since 1920. More recently the Biological Survey of the U. S. Department of Agriculture has found it efficient in certain types of work in the eradication of prairie dogs. During the summer of 1929, the loss of a number of sheep that had grazed over an area on which oats mixed with thallium sulphate had been spread for the destruction of prairie dogs, cast suspicion on the thallium and furnished the impetus for the work here reported.

### PREVIOUS WORK

Munch<sup>1</sup> has given a very comprehensive review of the toxicity of thallium sulphate and adds the details of his own work which was carried on with rats and rabbits. He concluded that the minimum lethal dose for these animals was 25 milligrams of thallium per kilogram of body weight, or 0.175 grains per pound body weight. The symptoms most commonly mentioned are: incoordination, trembling, emesis, albuminuria and alopecia. Lesions consisted of a gastro-enteritis in acute cases and degeneration observed in the kidney, ovary, testicle, thyroid and adrenal glands, in the more chronic forms. Some workers attributed the loss of hair to injury to the autonomic nervous system.

### OUR WORK

While poisoning is mentioned in man, dogs, hens, ducks, rabbits and rats, no information specifically relating to sheep could be found. It was decided, therefore, to feed sheep known amounts

\*Joint contribution from the Laboratory of Veterinary Pathology, Colorado Agricultural Experiment Station, and the Denver Control Methods Research Laboratory, U. S. Bureau of Biological Survey.

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of thallium sulphate mixed with oats, and record the results. Accordingly, five yearling sheep were selected and given sound oats for a few days to accustom them to eating the grain. They were then fasted for twenty-four hours, after which one of them (37) was offered his portion of poisoned grain. As he refused to eat it, it was removed and the sheep allowed to fast another twenty-four hours. At the end of this time they were given the amounts as appear in table I. Only one ate its allotment greedily, but all cleaned theirs up within twelve hours after its administration. The others had to be coaxed by the addition of salt and sound grain. Four out of the five died, after which two more sheep were given still smaller amounts in order to observe the symptoms of non-lethal doses. The last five appearing in the table were given their poisoned grain on October 9, while the first two were fed on November 4. For the sake of clarity, all seven of the animals are tabulated together. The oats carried 77 grains of thallium (as the sulphate) to the pound, which is the concentration used in rodent poison.

TABLE I—*Toxicity of thallium as sulphate for sheep*

EAR TAG	WEIGHT		OATS FED (OUNCES)	GRAINS		MGMS. PER KILO	RESULTS
	LBS.	KGS.		PER HEAD	PER CWT.		
248	90.0	40.9	0.42	2.0	2.22	3.17	No symptoms
142	87.5	39.8	1.04	5.0	5.72	8.17	Wool slipping on 14th day
100	103.0	46.8	1.45	7.0	6.80	9.72	Wool slipping on 20th day
31	83.0	37.7	2.92	14.0	16.87	24.10	Died in 9 days
None	86.0	39.1	3.29	15.79	18.36	26.20	Died in 4 days
37	108.0	49.0	4.35	21.0	19.44	27.80	Died in 7 days
86	91.5	41.6	5.82	28.0	30.60	43.70	Died in 4 days

## PROTOCOLS

Sheep 248, weight 90 pounds, fasted 48 hours, fed .42 ounces of poisoned oats, November 4, 1929, started eating promptly and had cleaned up all oats by the following morning. Showed no symptoms of poisoning up to December 31, the date of this writing.

Sheep 142, weight 87.5 pounds, fasted 48 hours, fed 1.04 ounces of poisoned oats, November 4, started eating at once and had cleaned the pan by the following morning. First loosening of wool noticed on November 18, because of an attempt to catch the animal. Head and back quite bare by November 25. No

other symptoms noticed. Animal in good condition, December 31, when all remaining body wool came off.

Sheep 100, weight 103 pounds, fasted 48 hours, fed 1.45 ounces of poisoned oats, October 9, at 11 a. m. By 1 p. m. it had consumed all of its food and was apparently looking for more. No symptoms appeared until October 11, when the animal was grinding its teeth, but picked at its hay occasionally. Symptoms about the same on the following day. On the 13th there was a mucopurulent discharge from the nose, the sheep was gaunt and had stopped eating. The feces were passed frequently, mixed with mucus.

October 15, nostrils almost occluded with mucous discharge; animal looks brighter.



FIG. 1. Sheep 142, showing loss of wool, three weeks after feeding the poison.

October 16, appears better; eating; feces normal.

October 29, sheep losing wool from head and rump.

October 31, most of head and back bare.

December 31, all remaining body wool came off. This animal returned to normal, even the wool beginning to grow again within two weeks of its loosening.

Sheep 31, weight 83 pounds, fasted 48 hours, given 2.92 ounces of poisoned oats, October 9, at 3 p. m. As the sheep would eat only a little of the grain, corn chop, salt and sound oats were added from time to time. It had cleaned up its pan by 5 p. m. No symptoms appeared until October 13, when the animal appeared gaunt, had stopped eating, was grinding its teeth and showed a mucous discharge from the nose.



October 15, the animal stretched frequently, showed some incoordination in hind limbs and was scouring.

October 16, animal down on its side but on our entering the pen he jumped up and stretched until the abdomen almost touched the ground. The posterior part of the body swayed when it walked. Passing considerable quantities of mucus from anus; nose shows only slight discharge.

October 17, down in pen, but rose when pen was entered. As it ran it swayed and knuckled posteriorly.

October 18, 8:30 a. m., much weaker but able to rise. Passing mucus from bowels. Died at 3:30 p. m. in spasms.



FIG. 2. Sheep 100, four weeks after feeding.

*Postmortem:* Rumen about one-third filled with ingesta; mucous membrane of first three stomachs normal; that in the fourth stomach showed severe inflammation that extended throughout the duodenum. Kidneys appeared congested. Small hemorrhages were seen under the costal pleura and under the epicardium.

Sheep with no tag, weight 86 pounds, fasted for 48 hours, and given 3.29 ounces of poisoned oats at 1:30 p. m., October 9. To encourage eating, corn chop, salt and sound oats were added

after the sheep had refused to eat the poisoned oats directly. By 3 p. m. all grain had been consumed.

October 10, animal walks stiffly, but is eating and drinking.

October 11, mucopurulent discharge from nose; quite stiff; not eating; grinding its teeth.

October 12, heavy, mucous discharge from nose, hanging in long strings (see figure 3). Frequent discharge of mucus from bowels.

October 13, found dead in pen at 9 a. m.

*Postmortem:* Many hemorrhages under pleura at costo-vertebral articulations. Few hemorrhages under epicardium;

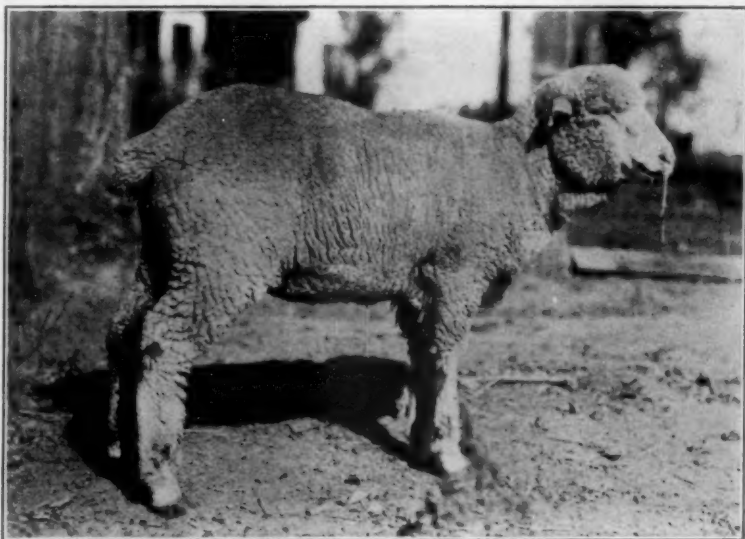


FIG. 3. "No Tag" sheep, on the third day. Note the string of mucus from the nostril.

mucous membrane of oesophagus reddened. Rumen one-third filled; mucous membrane of first three stomachs normal, that of the fourth deeply reddened; severe inflammation in first eight inches of duodenum and slight inflammatory disturbance in jejunum; kidneys congested.

Sheep 37, weight 108 pounds, fasted for 24 hours and offered 4.35 ounces of poisoned grain on October 8, which it refused to eat after tasting. Oats were removed and offered again on the following day. Animal ate a little at infrequent intervals. By adding a little ground corn and salt from time to time, the animal had consumed most of the poisoned oats within four and one-half hours. All had been cleaned up by the next morning.

October 11, sheep grinding its teeth; dull; not eating.

October 13, mucopurulent discharge from nose; labored breathing; gaunt.

October 14, animal much depressed; nostrils plugged with mucus, making it necessary to open its mouth to breathe. Passing mucus from the bowels at frequent intervals.

October 15, very dull; wobbly gait; nostrils plugged; still discharging mucus from bowels.

October 16, down, unable to rise; died about noon.

*Postmortem:* Rumen about one-half full; mucous membrane of reticulum and omasum reddened, of abomasum highly inflamed and ulcerated at the pylorus. Duodenum deeply reddened throughout. Areas of enteritis in both the jejunum and ileum. Kidneys deeply reddened.

Sheep 86, weight  $91\frac{1}{2}$  pounds, fasted 48 hours, then fed 5.82 ounces on October 9, at 1:30 p. m. It consumed its food sparingly but after the addition of corn chop, salt, and sound oats, most of it was gone by 5 p. m. All cleaned up by the following morning.

October 11, not eating; grinding its teeth; passing mucus from bowels and nose; labored breathing.

October 12, profuse mucous discharge from nose and anus, respiration difficult, animal very gaunt and weak.

October 13, found dead at 9 a. m.

*Postmortem:* Esophageal mucous membrane reddened. Only about one quart of ingesta in rumen. Extreme inflammation of abomasum, with ulceration at the pylorus. Reddening and ulceration extends along duodenum for ten inches. Some evidence of inflammation in jejunum. Kidney deeply reddened. Other organs normal.

#### SUMMARY OF SYMPTOMS AND LESIONS

From the protocols we may set down the most characteristic symptoms of thallium poisoning as: inappetence; grinding the teeth; weakness, especially noticeable in the hind limbs; glairy mucous discharge from the nostrils, making respiration difficult; scouring, followed by frequent discharge of mucus from the bowels; and, in those surviving, loss of wool from the head and back.

The lesions are those essentially of an acute gastroenteritis, most prominent in the fourth stomach and duodenum, with ulceration in those getting the larger doses. The kidney shows an acute inflammatory process with parenchymatous degeneration.

### CONCLUSIONS

Sheep do not readily eat oats mixed with thallium sulphate, even after fasting. Thallium sulphate is poisonous to sheep when taken by the mouth. The lethal dose is about the same as that for other animals previously reported, the smallest amount that proved fatal being 24.10 milligrams of thallium per kilogram of body weight. The least dose that caused shedding of wool was 8.17 milligrams of thallium per kilogram of body weight.

### REFERENCE

<sup>1</sup>Munch, John C.: The toxicity of thallium sulphate. *Jour. Amer. Phar. Asso.*, xvii (1928), p. 1086.

### Examination for Illinois Veterinarians

Dr. W. H. Welch, Chief Veterinarian, Division of Animal Industry, Illinois State Department of Agriculture, announces that an examination will be held June 26, 1930, for veterinarians who desire to become accredited. The laws of Illinois require that all cattle under quarantine be tested by an accredited veterinarian before they can be legally released from quarantine. It is the policy of the Department to place on the list of approved assistant state veterinarians all who have passed this examination.

For the convenience of applicants, the examinations will be held at three different places. Dr. J. J. Lintner will conduct the examination that will be held at the Union Stock Yards, Chicago. Dr. Chas. F. Payne will be in charge of the examination to be held at East St. Louis. Those desiring to take the examination at Springfield should report to Dr. W. H. Welch, at the Capitol.



Morning Glory Pool, Yellowstone National Park,  
Union Pacific System



## THE HORSE IN THE ARMY\*

By MAJOR GEO. H. KOON, V. C., U. S. Army

Washington, D. C.

History is filled with instances showing the horse as a potent factor in the advance of civilization; in agriculture, commerce, transportation and sports. The recorded world history is the record of wars between nations, and here the horse has indeed reached sublime heights. The pomp and glory associated with armies and wars of the past are dependent upon the horse for expression; we see Napoleon at Austerlitz, retreating from Russia, at Waterloo, upon his white charger; we bring Washington, Grant, Lee, Sheridan before our mindsight, and we see them mounted; the capitals of all nations are filled with equestrian statues.

In all early wars, during our Civil War, and to some extent even in the World War (Allenby's campaign in Palestine) the horse was used not only as a beast of burden and as a means of transportation, but was used effectively as an offensive weapon.

Three inventions have brought about a decided change in the use of cavalry in an army: the modern semi-automatic rifles and machine-guns, capable of sustained rapid fire; the aeroplane, which, when used for aerial reconnaissance, can cover great areas, take photographs of enemy activities, and return with a report in a matter of minutes; and the automobile.

But I would disabuse your mind of the idea that the usefulness of the horse in an army is past. As a weapon *per se*, as in shock action, yes, but not as a beast of burden, for draft, or to transport armed soldiers. The Army continues to utilize animals in pack trains, in horsed artillery, and in cavalry, and tables of organization of the Army upon a war basis contemplate their use in a very little diminished ratio to man power as compared with the past. The question of roads is a vital factor. While members of the air service are rather inclined to consider they are the "eyes of the Army," they are practically blinded under certain weather conditions. The air corps and cavalry are complements to each other in reconnaissance, scouting and patrolling; while cavalry can be used for advance guard; screening if our own air forces have control of the air; protection of flanks and rear; turning

\*Presented at the annual meeting of the Maryland State Veterinary Medical Association, Baltimore, Md., January 16, 1930.

flanks of an enemy, and pursuit. Upon a terrain having poor roads, or sometimes no roads at all, horsed artillery can be used when they could never get into position if dependent upon motors. For field and combat trains, with an adequate network of hard-surfaced roads, motors are best for corps and army units and for long-distance hauling. However, they *must* have the roads. For divisional units and for short hauls, and at the front, where there is greater congestion, draft animals are best utilized. In mountainous country, pack transportation would be indispensable.

Inasmuch as no one can fortell the kind of terrain that might be involved should we be so unfortunate as to engage in another war, the War Department, as the official agency of our government charged with the duty of promoting the national defense, cannot neglect to lay plans for the utilization of animals. At the same time it would be negligent of its duty if due regard were not given to the possibilities of mechanization. This thought was expressed by the Chief of Staff of the Army, General Summerall, in his recent annual report, and that is the status of the Army today. Experiments are being carried on to find out how best to utilize up-to-date motive power, and at the same time plans for the future contemplate the use of animals where they are of distinct advantage.

#### WAR-TIME ACTIVITIES

A discussion by a veterinary officer upon the subject of the horse in the Army would not be complete without reference to the leading achievements of the veterinary service during the World War, achievements to which we point with pride.

The Army purchased 483,000 horses and mules and each one received a critical examination by a veterinary officer. Sixty-five thousand animals were shipped to France under the personal supervision of veterinary officers and the losses were one per cent, half of which was unavoidable from storm.

The Veterinary Corps established, equipped and operated in the United States nearly 40 stationary veterinary hospitals, accommodating from 200 to 1,000 patients each, many of these filled to capacity for months, and reduced a constantly non-effective rate from sickness from 9 per cent, in December, 1917, to well under 3 per cent.

The Veterinary Corps organized, trained, equipped and sent to France 21 field veterinary hospitals, each of 1,000 patients capacity and manned by 7 officers and 300 enlisted men, besides

some 15 smaller evacuation hospitals; and trained, equipped and sent to France with each division a service for the care of the animals and a section for evacuating to hospitals those disabled.

The Veterinary Corps in France, when given the opportunity and after numerous expedients had failed dismally, organized an efficient service of evacuation and hospitalization of disabled animals, rapidly eliminated a most extensive infection with mange and other diseases, reducing a sick-rate of over 35 per cent one-half in a few weeks, and thereby performed invaluable service in restoring the efficiency of horsed units, which in many cases had been almost, if not quite, immobilized by reason of animal disability.

The Veterinary Corps developed a system of inspection and mallein testing which have practically eliminated glanders from army animals today. I say practically, because we occasionally do have a sporadic case here and there, but no outbreaks. The Army sold to the civilian population of the United States over 215,000 animals, each one of which received a clean bill of health from a veterinary officer and information is yet to be received of a single case of glanders developing among these animals. Contrast this record with what took place following the Spanish-American War, when the country was flooded with glandered animals from the Army.

#### MEAT FOOD PRODUCTS INSPECTED

The Veterinary Corps inspected every pound of meat and meat food products shipped to France, as well as a vast proportion of that issued to troops in the United States (known to aggregate far in excess of 1,500,000,000 pounds) and there was no embalmed beef scandal.

The Veterinary Corps maintained one training school, through which passed 650 veterinary officers, and another training school which trained and sent to France 201 officers and 6,250 enlisted men.

But what is most important of all, the Veterinary Corps found itself. It discovered the meaning of the term, "veterinary service." It developed an efficient organization, realized its great possibilities and its true value to the Army. It taught the Army itself some of these truths.

One contributing force in the success of the World War, which has received but scant recognition, is that hybrid, the mule. The

part played by the mule in the American Expeditionary Forces is an outstanding feature. A remarkable array of mules took part in the World War in the United States Army. There were 124,137 of them in the United States, and of that number 18,596 went over seas and actually took part in the war. Added to this lot were 11,036 from Spain, 8,992 from France and 6,794 from England, a total of 45,418. Many of the mules purchased from England and a number secured from the French had been bought in the United States by those countries. But those secured from Spain were the product of that country.

#### HORSE AND MULE LOSSES COMPARED

There are some interesting figures shown in the percentage of losses by death among mules as compared with horses during the World War. From July 1, 1917, when the U. S. Army first received animals in France, up to November 11, 1918, the percentage of losses among horses reached 25.37, while the losses among mules was 10.88 per cent. The losses from July 1, 1917 to June 28, 1919, the date of the signing of peace, ran to 27.97 per cent among horses, while among mules the losses were 13.12 per cent. Figures compiled on both horses and mules from July 1, 1917, to August 31, 1919, when the American Forces in Germany had disposed of practically all of their surplus animals, show a loss of 26.1 per cent. A further comparison shows that, even though animals are not exposed to the rigors of campaigns, replacements in rather large figures are essential to the upkeep of the Army. From April 6, 1917, to November 11, 1917, the loss among horses was 9.5 per cent, while among mules it was only 3.7 per cent. From the beginning of the war, to June 28, 1919, the losses among horses were 14.9 per cent, while among mules they were 4.6 per cent, or a loss of 10.4 per cent among both horses and mules.

The record of the mule through the World War was such as to reflect great credit upon the dam, the farm mare of the United States, as well as upon the long-eared, loose-jointed progenitor of that hybrid, an animal indispensable to the success of our Army in the field.

Credit to individuals for meritorious service in the Army is rendered in the form of decorations, and, after death, if the service was of an extraordinary nature or the individual was of high rank or prominence, memorial tablets and monuments. Our equine friends of the World War have been given a tribute in the form of



a bronze tablet (3 ft. x 4 ft.) on the wall near the main entrance to the State, War and Navy Building, Washington, in commemoration of the services and sacrifices made by the horses and mules with the American Expeditionary Forces during the World War, and unveiled by Mrs. Harding, October, 1921. The tablet shows a field artillery piece, fully equipped with horses and riders and cannoneers, in action on the field of battle. It contains the following legend in raised letters of bronze:

This tablet commemorates the service and sufferings of the 243,135 horses and mules employed by the American Expeditionary Forces overseas during the great war which terminated November 11, 1918, and which resulted in the death of 68,682 of those animals. What they suffered is beyond words to describe. A fitting tribute to their important services has been given by the commander-in-chief of the American Expeditionary Forces, Gen. John J. Pershing, who has written: "The Army horses and mules proved of inestimable value in prosecuting the war to a successful conclusion. They were found in all the theaters of preparation and operation doing their silent and faithful work without the faculty of hoping for any reward or compensation." This tablet is erected by friends of the horse and mule in the United States, under the auspices of the American Red Star Animal Relief, a department of the American Humane Association.

Following the sale of surplus animals, both in Europe and the United States, after the war, the Army in 1921 had 90,000 animals. This number has been gradually reduced until now the Army has 37,895 animals. The present peace-time authorized allowance is 21,500 horses and 12,500 mules, a total of 34,000, so we actually have a surplus of over 3,500 animals. The rate of reduction is such that in 1932 we will be down to our authorized peace-time allowance.

#### PURCHASE OF REPLACEMENTS

Since 1921 the Army has purchased approximately 20,000 animals as replacements. The number purchased has decreased each year, as appropriations have been decreased. For the next fiscal year, beginning July 1, 1930, money has been appropriated to purchase 1,000 horses and 500 mules, the smallest number purchased in one year since the World War.

For the next fiscal year, \$397,500 has been appropriated for the purchase and breeding of animals, which is \$100,000 less than this year. The yearly appropriation for breeding has been \$150,000, but for the next fiscal year has been reduced to \$132,000.

The appropriation for motor transportation for the next fiscal year is \$2,435,574, which carries an increase over the present year of \$264,754, such increase being for repairs to motor vehicles (\$70,500) and getting war stocks in shape for issue (\$181,942).

Considering unit costs of motor vehicles and animals, the need for mechanized experimentation, and the fact there is a surplus over the peace-time allowance of animals, appropriations for purchasing and breeding of animals seem adequate.

In addition to the figures given, there are 10,322 horses in the National Guard, and money appropriated to purchase 500 more during the next fiscal year. There also was appropriated \$1,373,430 for forage for National Guard animals for the next fiscal year, an increase of \$171,145 over this year.

From September, 1914, until June, 1916, the Allied Countries purchased and shipped from this country 611,790 horses and mules. The United States purchased 483,000 horses and mules, 65,000 of which were shipped to France, making a total of 844,177 animals shipped from this country during the War.

While there are at present a sufficient number of draft animals in this country to supply any anticipated needs of the Army, due to the number shipped from this country during the War, the increase in motor vehicles and the decreased interest in breeding of eight to ten years ago, the number of light cavalry horses available is not sufficient.

#### BREEDING OF CAVALRY HORSES STIMULATED

To provide for this light cavalry type of horse, and to stimulate horse breeding and the advancement of agriculture, the Remount Service of the Quartermaster Department of the Army, which agency purchases all Army animals, has promulgated its breeding plan. Briefly the plan is this: The country has been divided into zones, with a Remount Purchasing and Breeding Headquarters for each, located as follows: Lexington, Ky., Kansas City, Mo., Colorado Springs, Colo., Salt Lake City, Utah, and the Remount Depots at Fort Reno, Oklahoma, Fort Robinson, Nebr., and Front Royal, Va. From these centers government-owned stallions are placed in the hands of civilian horsemen, to be bred to selected mares within their territory. There are at present 620 stallions scattered throughout the country, the Thoroughbred predominating. The Government has no contracts with the owners of the mares for the privilege of purchasing the colts but is a potential buyer of suitable colts at 3 years of age and older if sound and of the type required. All animals are purchased for the Army subject to passing a physical examination by an Army veterinary officer, and subject also to the intradermic mallein test.

The Army veterinary officer examines all animals for purchase, and examines all those condemned, and in between these times there is no phase of the army life of animals with which the veterinary officer is not concerned, whether it be shipment by rail or water, marching overland, in the field, in stables in garrison, or in pasture. Through the application of rigid quarantine regulations and scientific sanitary measures of animal management the incidence of disease among Army animals is extremely low. We are troubled considerably with periodic ophthalmia, and the so-called "shipping fevers" are still with us. Investigations continue to be carried on looking to the control of these conditions. Equine infectious abortion has been definitely controlled through the use of bacterins.

Nothing is stationary. We go forward or backward, rise or fall, grow or die. The world has discarded more apparently permanent institutions during the last few decades than formerly were eliminated in many centuries. One attribute of a materialistic age is that useless things are abandoned. In it nothing is retained alone because it is ancient. Reverence bows only to utility. There may be some in the Army who may be accused of opposing great problems with the "passive resistance to change," but I do not believe this is true of the Veterinary Corps. As is pertinently brought home in variously quoted epigrams, the basis of progress is much dependent upon service. So with the Veterinary Corps in all of its transactions in the Army, fundamentally, its success is built upon *service rendered*.

The Medical Department of the Army is responsible for the health of the troops, and in its sanitary efforts to control disease the Veterinary Corps is a vital factor, being charged with the inspection of all meats and meat food and dairy products. During the World War nearly 35 per cent of the veterinary personnel was engaged in the inspection of meats and meat food and dairy products, and at the present time this activity alone justifies the veterinary service as now organized in the Army.

#### VETERINARY RESERVE CORPS

I feel I would be derelict in my duty not to take advantage of this opportunity to mention the Veterinary Reserve to you. The policy of appointment is such that it is impossible to give the rank many applicants desire. It is not the age of a man, or his standing in his community, that determines the rank given, but his value to the Army. And value to the Army is attained only

after proper training. We are very desirous of securing the young men of the profession, and, if there are any here interested in the Reserve, I would like to take your name or application, or suggest that you write for information to the Commanding General, 3rd Corps Area, Baltimore, or to the Surgeon General of the Army, Washington.

### **Boiling Milk in Aluminum Does Not Destroy Vitamin C**

Aluminum cooking utensils have no selective destructive action on the antiscorbutic vitamin of milk, according to the results of experiments carried out at Mellon Institute of Industrial Research, Pittsburgh, Pa. Milk, man's most nearly perfect food, has particular importance in the dietary of the infant and child. There has been a growing tendency to boil milk whenever it is to be used in supplemental feedings, or whenever a supply is of doubtful origin. In thus safeguarding the health of children against microorganisms and in providing for better assimilation of the proteins, mothers may be assured that when they use aluminum utensils for the preparation of milk they are not depriving this invaluable foodstuff of its antiscorbutic properties.

In the Mellon Institute experiments, milk was boiled lightly for five minutes in aluminum or glass containers. Some destruction of vitamin C occurred in each case as a result of the boiling, but the metallic utensils exerted no greater action than did those of glass. Another interesting observation is that winter milk from ensilage-fed cows is practically as potent in vitamin C as the best summer milk from cows on pasturage.



Hollywood Bowl, Hollywood, California



# CLINICAL AND CASE REPORTS



## BRUCELLIASIS IN SHEEP

By E. A. BRUCE, Agassiz, British Columbia

*Animal Pathologist, Health of Animals Branch,  
Canada Department of Agriculture*

That *B. abortus* Bang can cause abortion in sheep has been proved experimentally by several investigators, but that it does so under natural conditions is another matter. Recorded cases, if any, must be rare, as I am unable to find any in the literature at my disposal. Certainly it does not appear to have been reported in North America; the following brief record therefore, may be of interest.

In February, 1927, a dead lamb, apparently full-term, was received from Dr. H. Keown, a practitioner on Vancouver Island. It came from a flock in which some trouble with lambing had occurred. Later it was found that the ewe concerned had some difficulty in lambing, and that she had twins, one of which lived.

As nothing outstanding could be found in the dead lamb, more out of curiosity than anything else, blood from the heart (hemolysed) was agglutinin-tested with *B. abortus* antigen, in dilutions from 1-50 to 1-20,000. Definite reactions occurred in all tubes from 1-50 to 1-5,000.

Pork-liver agar tubes were inoculated with material from stomach, meconium and heart-blood and incubated in 10 per cent CO<sub>2</sub>, but without success.

Some two weeks later, the flock from which the lamb originated was seen. This consisted of eighteen ewes, six of which had lost lambs, some as much as three weeks ahead to full-term, dead lambs. In some instances the lambs were said to have been decomposed, and retained placenta was common. A dirty discharge was noticed for about a couple of weeks. Sheep had been on the place for three years and the previous year one ewe lost

her lamb. Only five cattle were kept and none of them had aborted.

The owner was a little uncertain as to which ewes had aborted, but eventually six were selected and these were bled from the ears. Blood from the ewe said to be the dam of the original lamb gave positive agglutination up to 1-500. With the remaining five it seems probable that the owner was mistaken in the animals as two of them were negative and one other reacted only 1-50. The other two, however, gave strong reactions in all tubes up to 1-2,000, which was the highest titre tried.

A small amount of milk was drawn from the dam of the original lamb, and 1.5 cc was injected into the abdomen of two guinea pigs. Probably owing to faulty technic one of these gave birth two days later to three well-grown young, and unfortunately was killed at the time. The other died eighteen days after inoculation, but owing to my absence from the laboratory was not examined until four days later. Death appeared to be due to a mixed infection but the lesions in the lungs, spleen and liver were suggestive of an acute *B. abortus* infection. Microscopical examination confirmed this, and subsequent cultures, while contaminated, gave some colonies that morphologically and culturally were *B. abortus*.

At about the same time that the foregoing cases were under consideration, another flock in the same district had similar trouble, but as far as is known there was no connection between the two flocks. A sample of blood from one of these ewes was forwarded by the same practitioner, and gave positive reactions for *B. abortus* up to 1-2,000, which was the highest dilution used.

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### INSOLATION IN DUCKS

*By M. W. EMMEL, East Lansing, Mich.*

*Michigan Agricultural Experiment Station*

Three hundred ducks, varying in age from four to fourteen weeks, were being raised on a small farm. Very few losses had been suffered until the weather became extremely hot, during the mid-summer months. At this time the owner began to experience a loss of six to eight ducks each day. Weakness and staggering seemed to be the only symptoms shown. Death would result in two to three hours. No losses were experienced except at mid-day or early afternoon.

A survey was made of the yards in which the ducks were kept. One small yard, about 24 by 14, was fenced on two sides by small houses, on the third side by a high wood-pile and on the north side by wire netting. Losses were greatest in this yard. A second much larger yard was situated on the south slope of a small hill. The ducks had access to the shade of two small trees under which as many stayed as possible. Water-vessels were placed in the middle of the yards.

While visiting the farm, it was noticed that the ducks would continually leave the shade to journey to the water-vessel to quench their ever-present thirst. Occasionally one would drink and start back to the shade only to stagger and finally fall, unable to rise. The owner remarked that if such ducks were put in the house they would be all right in several hours. If left alone, they would die in two to three hours. A diagnosis of sunstroke was made and the owner was advised to stretch bagging between four widely separated posts and at least three feet off the ground. Such a provision would provide plenty of shade and ventilation at the same time. It was also advised that water-vessels be placed under similar shade. The result was that losses ceased immediately.

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### REMOVAL OF SPLENIC TUMOR

*By* WILFRED J. RUMNEY, *Hamilton, Ont.*

*Subject:* Irish Terrier, 9 years of age, weighing 35 pounds.

*History:* Eight months previously, the dog was admitted into the hospital, with injuries received from a motor, showing symptoms of shock and distressed breathing, but made apparent recovery after treatment.

*Symptoms:* Labored breathing; enlargement of the abdomen, which was quite firm to the touch; dog groaned when manipulated in that region; was quite emaciated, vomiting, and very weak.

*Diagnosis:* Tumor in abdominal cavity.

*Treatment:* Owner was advised that medicinal treatment, other than stimulants, gastric sedatives and mild laxatives, would be of little value. These were given for one week and the dog was brought back. Abdominal pressure had increased and an operation was advised. After withholding food for twenty-four hours, 1 cc of adrenalin chlorid was injected subcutaneously.

*Anesthesia:* For this dog  $1\frac{1}{2}$  drams of chloral hydrate was dissolved in 12 ounces of warm water. This was given per

rectum, through gravity rectal tube. Hind quarters were elevated for ten minutes. Anesthesia was complete in thirty minutes. During this time, the operative area was prepared.

*Technic:* The dog was laid on the left side. A vertical incision six inches long was made in the right flank, exposing the abdominal viscera. The tumor was found to originate from the spleen, firmly attached to and dividing this organ in two definite lobes, being seven inches in diameter and nearly round. The incision was extended to the median line, and the tumor and spleen removed. Hemorrhage was controlled without ligatures by using torsion in separating the blood-vessels. Chromic gut (No. 1) was used to suture the peritoneum and muscular wall, and braided silk (No. 10) in the skin.

*Outcome:* The dog was looking for food in twenty-four hours. Meat broth and gruel were given for three days. Dog was allowed to walk about on the third day and was kept in the hospital for one month for observation. Arsenious acid (1/40 grain) was given every other day, alternating with one grain of calcium iodid. Two months after the operation, the dog was brought in for examination and was found in good thriving condition. The owner stated that he was back to his puppy ambitions.

*Pathological report:* Hemangioma.

*Conclusions:* That chloral hydrate in this and many major operations which we have had in the past two years has proven a satisfactory general anesthetic. That administration of adrenalin chlorid before operating controls hemorrhage and prevents shock.

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## LEAD POISONING IN KITTENS

*By* HAROLD N. GUILFOYLE, *Wethersfield, Conn.*

Two six-months-old kittens from the same litter developed clinical symptoms of emaciation, staring coat, mucous membranes somewhat anemic, chronic constipation, spasmodic abdominal convulsions and in one of the kittens a well-marked paraplegia. The animals were pets, well fed and cared for. Further investigation revealed the fact that the kittens were accustomed to sleeping in a printing-shop, the one with the aggravated symptoms making its bed in a wooden box half full of lead type and the other sleeping in a similar box containing metal strips (leads) used for spacing type, composed of an alloy of lead and some metal resembling zinc. A diagnosis of lead poisoning was



arrived at. The kittens were provided with clean blankets in lieu of the metal bedding. By way of medication, castor oil was administered and a compound elixir of iodids in doses of two drops in milk three times a day, which was consumed voluntarily.

The kittens made a rapid and complete recovery.

### ENORMOUS LOSS OF PIGS DUE TO DIFFERENT KINDS OF PARASITES

By ERNEST F. JARDINE, Basseterre, St. Kitts.

On September 22, 1929, Mr. X reported that for about two weeks previously he and others in the Y district of this island had been losing pigs of various ages. On the following morning he reported the death of a sow, and two others sick. One of the sick ones was a sow imported from Canada about two months before.

*Symptoms:* Mucopurulent discharge from nose, breathing fast, constipated, temperature 105° F. The native sow showed similar symptoms, except that she had no discharge from the nose.

*Diagnosis:* Pneumonia, probably due to parasitic infection.

*Treatment:* Aromatic spirits of ammonia and spirits of nitrous ether. Magnesium sulphate to relieve constipation.

I asked the owner to report if the sows died, especially the imported sow. The imported sow died and no report was made. The other one died about six days later. At the time the death was reported, it was too late in the evening to make a postmortem and, the distance being far, I could not get to the place until 10:00 a. m. the following day.

*Postmortem conditions:* The carcass was in an advanced state of decomposition. Lungs, full of tubercles; mediastinal lymph-glands and submaxillary glands, normal; spleen, normal; liver, enlarged, and many worms threading through the substance; gall-bladder, of a calcareous consistency—no bile; kidneys contained many *Stephanurus dentatus*; mesenteric lymph-glands, normal; small intestines contained hundreds of worms, 12 to 14 inches long, firmly attached to the mucous membrane and many had bored through the walls of the intestines; no ulceration of ileocecal valve or large intestines.

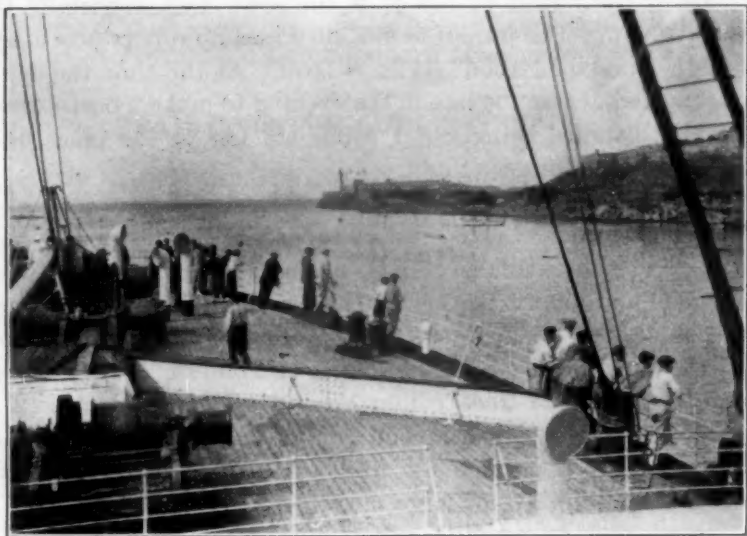
Tissues of lung were examined microscopically and revealed *Strongylus paradoxus* and many eggs. Blood-smears showed only

bacilli of decomposition. The worms boring through the intestines were identified microscopically as *Echinorhynchus gigas*, and others as *Ascaris suum*.

The postmortem conditions on the sow, whose death was reported September 23, the day the other sows were reported sick, were as follows: The animal was an old sow, badly emaciated; lungs, full of tubercles; lymph-glands of head and lungs, normal; many *Strongylus paradoxus* in lungs and intestines contained hundreds of worms similar to the other sow. Microscopical examinations of blood, lymph-glands, spleen and kidneys showed no bacteria of any kind at all.

After making about seven portmortems and finding no lesions of hog cholera or swine plague, and as microscopical examinations, with the exception of the sow that was in advanced state of decomposition, revealed no bacteria of any kind, I reported my findings to the Honorable The Administrator of the Colony, and diagnosed the cases as due to parasitism.

Pigs of all ages, from sucklings to old ones, all conditions, thin and fat ones, were affected. The history of the cases was that they just went off feed, would lie around a good deal and groan. Death would take place in 10 to 14 days.



Leaving Havana Harbor on a Panama Pacific liner



# REVIEWS

**DISEASES TRANSMITTED FROM ANIMALS TO MAN.** Thomas G. Hull, Chief Bacteriologist, Illinois Department of Health, etc. With an introduction by Veranus A. Moore, late Director, New York State Veterinary College. xxiv + 352 pages, with 29 illustrations and 43 tables. Charles C. Thomas, Springfield, Ill., 1930. Cloth, \$5.00.

Many articles dealing with animal diseases communicable to man have been prepared during recent years for presentation to medical, veterinary and lay audiences, but this is the first book that has been prepared on the subject. The author's close association with veterinarians, physicians, sanitarians and laboratorians has eminently qualified him to write such a book, as it has been possible for him to understand and appreciate the viewpoints of the various groups.

Diseases are discussed separately. First come the well-known diseases of domestic animals and birds, including tuberculosis, anthrax, foot-and-mouth disease, undulant fever and contagious abortion, milk sickness, actinomycosis, smallpox and cowpox, glanders, rabies, psittacosis, food poisoning, swine erysipelas and the animal parasitoses. In the second section are the rodent affections. Section III covers those diseases of the human family that are spread by animals. The fourth section discusses animals as passive carriers of disease organisms, such as those of botulism, tetanus and gas gangrene. Section V is a review of the role played by each animal in the spread of disease.

In discussing each disease the author has emphasized the epidemiology of the infection, with sufficient bacteriology to balance the other material, although no attempt is made to cover such phases of these diseases as pathology, clinical symptoms or treatment. A bibliography is appended to each chapter, as well as a summary headed "Items of Note."

The subject matter generally is well selected and systematically presented. The book naturally is largely a compilation of

existing knowledge on the subject, gleaned from the literature of all time. The writings of some 700 authors have been drawn upon, as revealed by the author index. The subject index, occupying 24 pages, is very complete, and affords a ready means for finding information desired. The author errs in stating that the term "black tongue" is used to refer to dumb rabies in the South (p. 118).

Illustrating a book of this kind evidently presented some difficulties. Some of the maps showing the distribution of certain diseases are out of date (bovine tuberculosis, 1928; abortion, 1926; plague, 1926; tularemia, 1928). The same criticism might be made of some of the tables. It is true that these have been taken from articles published some time ago. Figures 15 and 16, maps showing the distribution of rabies in the United States in 1926 and 1921, are without explanatory keys to show the relative incidence of the disease in different states. Several of the illustrations (figs. 6, 7, 11, 26, 27) would more properly belong in a text-book on pathology.

It is regrettable that so many typographical and grammatical errors were allowed to appear in a book of this kind. Misspelled words, not always technical, are noted with surprising frequency. The same criticism holds for many proper names. *Bacillus enteritidis* is consistently misspelled. The use of Italics and capitals is not consistent throughout the book.

All veterinarians should have a copy of this book in their libraries. It will be found useful in many ways. Questions arise almost daily, in connection with one or more of the diseases mentioned in the book, and it will be found to be a very convenient means of getting facts quickly.

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GUIDE TO THE STUDY OF ANIMAL PARASITES. W. A. Riley, Ph. D., Sc. D., and R. O. Christenson, M. A., Department of Zoology, University of Minnesota. xv + 131 pp., with 33 figures in the text. McGraw-Hill, New York, 1930. Cloth, \$1.50.

Recent developments in the field of animal parasitology have reflected the growing importance of this subject, and a demand for more knowledge has been created among those who previously were allowed only a superficial glance at the subject in courses in zoology. As pointed out by the authors, special courses have been offered in some of our colleges and these have presented new problems for the teacher, among which is mentioned a lack of



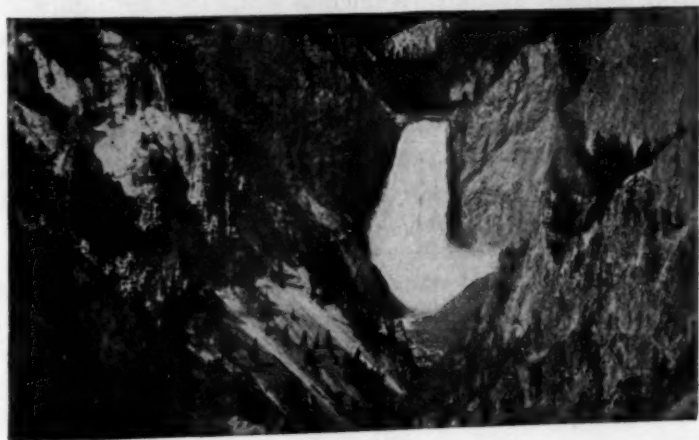
suitable texts and laboratory guides. It is to fill the latter need that this book has been prepared.

The subject matter is grouped in 19 chapters and an appendix. The book is well illustrated and the subject matter conveniently arranged. Chapter XIX covers the literature of animal parasitology, a valuable feature. In the appendix are to be found directions for: collecting and preserving animal parasites of different kinds; making permanent mounts of helminth eggs; preparing reagents and mounting media. A list of the more important endozoa of laboratory animals is included; also a list of supply houses handling parasitological materials; and finally a list of comprehensive texts.

The omission of arthropods from a text of this kind is explained by the authors.

#### **Cuban National Veterinary Association**

On April 15, 1930, the Cuban National Veterinary Association elected the following officers: President, Dr. Alejandro Castro y Rodriguez; first vice-president, Professor Dr. Julio San Martin y Saenz; second vice-president, Dr. Rogelio Valdes Jorge; secretary, Dr. Vicente Embil y Bollada; vice-secretary, Dr. Pedro Galindo y Ridriguez; treasurer, Professor Dr. Francisco Etchegoyhen y Montane; vice-treasurer, Professor Dr. Bernardo J. Crespo y Garcia; directors, Professor Dr. Juan Hernandez, Dr. Fidencio Sanchez y Estrada, Dr. Agustin Serralta, Dr. Abelardo Walemberg and Professor Dr. Julio E. Brouwer y Etchecopar; consulting advisor, Professor Dr. Reinaldo Marquez y Camacho.



Great Fall, Yellowstone

# ABSTRACTS



THE EFFECT UPON ANIMALS OF INOCULATION WITH THE VIRUS OF POLIOMYELITIS. II—Dogs, Cats, Guinea Pigs, Mice and Other Animals. Paul H. Harmon, Howard J. Shaughnessy and Francis B. Gordon. *Jour. Prev. Med.*, iv (1930), 1, p. 89.

Young dogs, young cats, guinea pigs, mice, young pigs, lambs and calves do not develop any condition recognizable as, or related to, poliomyelitis, following massive inoculation of virus of established pathogenicity for monkeys. Although a small proportion of inoculated animals succumb, death is due, in the main, to acute intercurrent respiratory disease.

COMPARATIVE VALUES OF ANTI-ANTHRAX SERUM AND OF NEOSALVARSAN IN THE TREATMENT OF EXPERIMENTAL ANTHRAX. Timothy J. Kurotchkin and Hobart A. Reimann. *Jour. Inf. Dis.*, xlvi (1930), 1, p. 36.

It was found that the specific immune serums which were used had no therapeutic value in experimental anthrax infections in mice, guinea pigs and rabbits. But it cannot be assumed from this that serum is of little or no value in the treatment of anthrax in other species, since it has been found to be of undoubted value in other domestic animals. Numerous statistics exist indicating its usefulness in treating human anthrax. Neosalvarsan was of value only in the treatment of experimental anthrax infections in guinea pigs and was without any effect in mice and rabbits. It is obvious that it is difficult to predict the value of any measures in the treatment of human anthrax infections from the results of experiments on other animals. Each species apparently reacts in a different manner to therapeutic efforts.

THE ACTION OF PANCREATIC JUICE ON BACTERIA. Alexander A. Day and William M. Gibbs. *Jour. Inf. Dis.*, xlvi (1930), 1, p. 26.

Pancreatic secretion of the dog obtained directly from the pancreatic duct by the aid of secretin was consistently sterile,

while that collected in a balloon usually contained a few bacteria. These contaminants are not normal inhabitants of the pancreatic duct. The fresh juice, that secured by the secretin method, killed the bacteria tested (with the exception of *Staphylococcus aureus*) within 48 hours, and was more effective than that gathered by the balloon method. In only one instance was digestion of the organisms noted. While *B. tuberculosis* was killed by the pancreatic juice, no evidence of dissolution of the cells or loss of acid-fast property was observed. Pancreatic secretion activated with enterokinase was no more bactericidal than the normal juice. Pancreatic juice diluted with salt solution or bile, or made acid, was ineffective against bacteria. The authors conclude that pancreatic juice of the dog has bactericidal properties which may not be great, yet may play a part in the normal defense of the pancreas against infection.

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A STUDY OF THE ANEMIA OF YOUNG PIGS AND ITS PREVENTION.

E. B. Hart, C. A. Elvehjen and H. Steenbock. Jour. Nutrition, ii (1930), 3, p. 277.

Sows restricted to a yellow-corn-skim-milk diet and to floored pens, shortly after weaning, maintain a normal hemoglobin level during the entire growing period. The addition of varying amounts of iron and copper to the ration does not increase the quantity of hemoglobin in the blood. The pigs farrowed by these sows invariably develop a serious anemia in 3 to 4 weeks. The hemoglobin falls from a normal of 8 gm. per 100 cc of blood, at birth, to 3 to 4 gm. per 100 cc in a period of a few weeks. The feeding of considerable amounts of iron and copper to the sow does not delay the development of anemia. Pigs farrowed by sows fed a practical winter ration developed anemia as rapidly as those from sows fed the basal ration of milk and corn. The anemia of the suckling pigs is rapidly cured by the administration of iron and copper salts. The feeding of iron alone stimulates hemoglobin synthesis as well as when the iron is supplemented with copper. Suckling pigs changed to a diet of cows' milk continue to develop anemia as rapidly as when allowed to remain with the sow. Under the experimental conditions, which were established with these pigs, the addition of pure, copper-free,  $\text{FeCl}_3$  to the cows' milk, cures the anemia and maintains the pig in normal condition. The exposure of pigs on a cows' milk diet to ultraviolet light and sunlight does not stimulate hemoglobin synthesis.

FUNGI AS THE CAUSE OF ABORTION IN CATTLE. H. C. Bendixen and N. Plum. *Abst. Arch. Path.*, ix (1930), 2, p. 595.

Seventeen cases of abortion in cows were studied and cultures were made from the placentae. *Aspergillus fumigatus* was isolated in eight cases, *Absidia ramosa* in two cases, and both organisms in the remaining seven. When both organisms were isolated it is highly probable that only one was the causative agent and that the other was present as the result of contamination after birth. Microscopically the hyphae were found in the placental tissue where they had caused widespread necrosis and considerable exudation. Macroscopically the cotyledons were composed of a yellowish gray or brownish necrotic tissue, which is characteristic of the disease. Five pregnant cows were injected intravenously with the spores or conidia of the organisms, and in all cases the same pathologic changes occurred in the placentae as were found following the natural disease.

VARIATION IN THE NUMBER OF WHITE BLOOD CELLS IN DOGS FOLLOWING ECK FISTULA. John S. Lawrence and Stephen J. Maddock. *Arch. Path.*, ix (1930), 2, p. 461.

A marked monocytosis occurred in dogs within the first week following Eck fistula. Splenectomy done at the same time as the Eck fistula tends to prevent this monocytosis. The average percentage increase in the number of circulating monocytes in the dogs of this latter group was approximately one-third that found in the dogs with Eck fistula alone. Dogs with reverse Eck fistula do not show this monocytic response. Intimal damage, anemia and operation are not the responsible factors. A diminution of the number of eosinophils in the blood of dogs follows operations of various types on the vascular system. The average number of the lymphocytes is constantly diminished in such dogs. Possible theoretical explanations of the monocytic response after Eck fistula are offered.

THE ROLE OF BED BUGS (*CIMEX LECTULARIUS*) AND TICKS (*ORNITHODORUS MOUBATA*) IN THE TRANSMISSION OF ANTHRAX. H. P. Rosenholz and O. W. Owsjannikowa. *Abst. Arch. Path.*, ix (1930), 2, p. 594.

The bite of bed bugs and ticks which had been infected with anthrax bacilli caused no infection in white mice. In some insects, however, anthrax infection persisted in the gastro-intes-



tinal tract for as long as one month. The feeding of such insects with blood from anthrax-sick animals led to the passage of anthrax bacilli into the body cavity where the organisms multiplied. In the dead bodies of such insects the anthrax bacilli remained alive for as long as six months.

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STUDY OF A CASE OF HODGKIN'S DISEASE IN A CHILD. Elise S. L'Esperance. *Jour. Immunol.*, xviii (1930), 2, p. 127.

The results of this study confirm and extend those of the author's first report, in a way which permits the conclusion that Hodgkin's disease may at least often represent an avian tuberculosis infection. Chicken inoculations of Hodgkin's disease material again resulted in typical avian tuberculosis and reinoculation from this into other chickens caused a more extensive tuberculosis with marked involvement of bones. Cultures of material from a reinoculated chicken gave a pure growth of tubercle bacilli, culturally of avian type. Treated guinea pigs inoculated with the original material developed extensive lymphatic tuberculosis and cultures on egg media showed many of the characteristics of a growth of avian tubercle bacilli. Subcutaneous inoculation of a rabbit with the original material caused no infection, as frequently happens with pure cultures of avian tubercle bacilli.

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A CASE OF PEL-EBSTEIN'S SYNDROME OF TUBERCULOUS ORIGIN. Elise S. L'Esperance. *Jour. Immunol.*, xviii (1930), 2, p. 133.

A case of Hodgkin's disease with the Murchison-Pel-Ebstein syndrome (a rather rare form in which gradual splenic enlargement with intermittent attacks of pyrexia, lasting for two weeks or longer are the most prominent features, the associated lymph-node involvement being either absent or insignificant) was studied. Experimental inoculation of chickens was made with Hodgkin's nodes. The author concludes that evidence is offered of the avian tuberculosis nature of a condition which presents a histological relationship to typical Hodgkin's disease and also in indicating that in the human being, as well as in the lower animals, especially birds, avian infection may be exhibited in various pathological lesions.

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THE PATHOLOGY OF DISSEMINATED ENCEPHALOMYELITIS OF THE DOG (THE "NERVOUS FORM OF CANINE DISTEMPER"). J. R. Perdrau and L. P. Pugh. Jour. Path. & Bact., xxxiii (1930), 1, p. 79.

Demyelination of the type commonly found in subacute disseminated sclerosis was found in 4 out of 14 cases of disseminated encephalomyelitis of the dog (the "nervous" form of canine distemper). The parts of the central nervous system where demyelination was most commonly found were the cellular peduncles and adjacent portions of the cerebellum and of the brain stem. Distemper is not apparently an essential antecedent of the encephalomyelitis, as the association of the two conditions was noted in only 7 out of 14 cases observed. The time interval which has been recorded in the disseminated encephalomyelitis of man, between the onset of the acute infection and the appearance of the nervous phenomena, is fairly constant; this has no parallel in this condition of the dog where it varies widely from case to case.

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THE EPIDEMIOLOGY OF FOWL CHOLERA. I. Introduction. Leslie T. Webster. Jour. Exp. Med., li (1930), 2, p. 219.

The severe epizootic form of infection is associated with a relatively virulent type of organism which survives with difficulty in the tissues of the host, whereas the enzootic disease is associated with strains of relatively low virulence and high vegetative capacity. The spread and severity of infection appear to be controlled by the resistance of the host and the dosage of the organisms.

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THE EPIDEMIOLOGY OF FOWL CHOLERA. II. Biological Properties of *Pasteurella avicida*. Thomas P. Hughes. Jour. Exp. Med., li (1930), 2, p. 225.

A study was made of 210 fresh strains of *Pasteurella avicida* obtained from typical cases of fowl cholera on seven widely spread farms. The strains fell into three distinct groups, according to their colony formation on hemoglobin agar. The "fluorescent" colonies were large, whitish and opaque, exhibiting marked fluorescence under suitable conditions. They were relatively highly virulent and occurred in flocks where fowl cholera was epizootic. The "blue" colonies were smaller, clear slate-blue and non-fluorescent. They were of relatively low virulence and occurred in flocks where fowl cholera was endemic. The "inter-

mediate" colonies were moderately fluorescent after growing for 15-18 hours and "blue" thereafter. They came from a flock where fowl cholera was epizootic.

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THE EPIDEMIOLOGY OF FOWL CHOLERA. III. Portal of Entry of *Pasteurella avicida*; Reaction of the Host. Thomas P. Hughes and Ida W. Pritchett. Jour. Exp. Med., li (1930), 2, p. 239.

*P. avicida* proved incapable of inciting fowl cholera when introduced directly into the alimentary tract. When administered into the upper respiratory passages it produced typical disease. When *P. avicida* was introduced into the nasal passages of controlled selected chickens, some died of typical septicemic cholera, a few developed chronic pneumonia and other conditions and succumbed, a few developed localized upper respiratory inflammations, such as rhinitis, roup and wattle involvement, while yet a few others became "healthy" nasal carriers. Usually, however, more than 50 per cent resisted infection. *P. avicida* was recovered from a number of cases of "spontaneous" roup, rhinitis and wattle disease. Groups of chickens reacted similarly to doses of virulent *P. avicida* varying from 20,000,000 to 20,000. Outside these limits, dosage exercised a marked influence on mortality.

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THE EPIDEMIOLOGY OF FOWL CHOLERA. IV. Field Observations on the Spontaneous Disease. Ida W. Pritchett, F. R. Beaudette and Thomas P. Hughes. Jour. Exp. Med., li (1930), 2, p. 249.

Field studies of fowl cholera on two commercial poultry farms are described. One farm, previously free of cholera, was studied during an active epizootic which occurred during the winter months. The strains of *P. avicida* recovered, both from "autopsy" and from "healthy" carriers, proved generally similar, and to be of the "fluorescent" or "intermediate" colony type. After the subsidence of the epizootic, these strains tended to disappear. The second flock consisted of a small group of birds which had survived an epizootic of cholera the previous year and in which the infection was prevailing in enzootic form. No deaths occurred during the period of observation, but the number of birds with localized lesions and the number of carriers increased to a high level during the winter months. The strains of *P. avicida* were

apparently of the "blue" colony form, although some resembled the "intermediates." These strains seemed to be spreading rather than dying out. Individual fowls differed in their response to the presence of infection; some showed localized lesions, others were carriers, while still others seemed entirely refractory.

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THE EPIDEMIOLOGY OF FOWL CHOLERA. V. Further Field Observations of the Spontaneous Disease. Ida W. Pritchett, F. R. Beaudette and Thomas P. Hughes. Jour. Exp. Med., li (1930), 2, p. 259.

An investigation of endemic fowl cholera was made at a poultry farm in Belle Meade, N. J. The reservoir of *P. avicida* proved to be the healthy pullets which had become carriers the previous year and which were selected as the breeding stock for the ensuing year. From these carriers the organisms spread and gave rise during the winter months to the various forms of infection, including the carrier state, localized upper respiratory disease and typical cholera. Strains of *P. avicida* were in general similar and of the "blue" colony type. A relatively high carrier rate was accompanied by a high mortality rate although, in one instance, a community with high carrier incidence plus a probable high degree of host resistance suffered but little fatal infection. The results produced by removal of carriers was both effective and practical.



Fox River Drive, Along Chicago and Northwestern Railway



## PUBLICATIONS RECEIVED

- Tuberculosis in Wild Duck Living Under Natural Conditions. R. Paine and G. Martinaglia. Reprint from *Proc. of Dept. Conf.* (not dated).
- Live Stock Diseases Report (No. 5), Department of Agriculture, New South Wales. Max Henry. Sydney, Australia, 1930. pp. 20.
- Multiple Focal Splenitis of Guinea Pigs. William H. Feldman. Reprint from *Amer. Jour. Path.*, v (1929), 4, pp. 371-376.
- Diseases of Domesticated Animals in South Africa Due to Organisms of the *Salmonella* Group. G. Martinaglia. Reprint from *15th Ann. Rpt. Dir. Vet. Serv., Union of South Africa, 1929*. pp. 233-295.
- Report of the Ontario Veterinary College, 1929. (Paper 8, 1930, Ontario Dept. of Agr., Toronto, Ont.) Illustrated. pp. 72.
- Southern Rhodesia, Rpt. of the Director of Veterinary Research for the Year 1929. Salisbury, Rhodesia, 1930. pp. 14.
- Studies on Rocky Mountain Spotted Fever. (Hyg. Lab. Bul. 154, Public Health Serv., U. S. Treasury Dept., Washington, D. C., 1930.) Illustrated. pp. 116.
- Fake Antiseptics and the Law. (Food, Drug and Insecticide Administration, U. S. Dept. Agr., Washington, D. C., 1930.) pp. 11.
- Studies in the Prevention of Milk Fever. J. Russell Greig. Reprint from *Vet. Rec.*, x (1930), 14, pp. 301-305.
- Studies on Porcine Infectious Abortion. Robert Graham, I. B. Boughton and E. A. Tunnicliff. (Bul. 343. Univ. Ill. Agr. Exp. Sta., Urbana, Ill., 1930.) Illustrated. pp. 240.
- Radio Talks on Food and Drug Laws. (Food, Drug and Insecticide Administration, U. S. Dept. Agr., Washington, D. C., 1930.) pp. 6.
- Experimental Tuberculosis by Intracerebral Inoculation. William H. Feldman. Reprint from *Amer. Rev. Tuber.*, xxi (1930), 3, pp. 400-422.
- Papillary Adenoma of the Urinary Bladder in the Ox. William H. Feldman. Reprint from *Amer. Jour. Path.*, vi (1930), 2, pp. 205-208.
- Extranephric Embryonal Nephroma in a Hog. William H. Feldman. Reprint from *Jour. Cancer Res.*, xiv (1930), 1, pp. 116-119.
- Brucella Agglutinins in the Blood and Milk of Cows. Robert Graham and Frank Thorp. Reprint from *Jour. Inf. Dis.*, xxxvi (1930), 3, pp. 260-262.



North Rim, Grand Canyon, Union Pacific System

## MISCELLANEOUS



### Fake Antiseptics Under Ban

"The clean-up campaign against fake antiseptics has been so effective that today the statements appearing on the labels of most preparations of this kind in interstate and import commerce are reasonably accurate," say drug control officials of the Food, Drug, and Insecticide Administration, U. S. Department of Agriculture.

The public is warned, however, to discriminate between the labeling upon the package itself and the advertising in circulars and periodicals, on posters and bill-boards, and the like. The federal Food and Drugs Act does not control such advertising and some manufacturers are taking advantage of this situation to disseminate the crudest sort of misinformation regarding their products.

Constant surveillance by the Department is kept over the labels of the new crop of antiseptics, to catch any fake or misbranded preparation as soon as it appears. Users of these preparations are told not to expect miraculous effects from the use of any antiseptic, such as a mouth-wash, the chief result of which is a pleasant taste. Such a preparation remaining in contact with the tissues but a brief period does not destroy all germ life in the mouth, nor does it have any influence during the remaining hours of the day.

Of more than a thousand supposed antiseptic preparations examined by Government chemists and bacteriologists during the past three years, less than one hundred bore labels to which no exception was taken by officials. Two preparations actually contained live bacteria and many of the others were found not to kill or prevent germ growth. Many effective antiseptics were found to carry unwarranted curative claims on the labels.

The wide use of antiseptics and the continued attempts of unscrupulous manufacturers to sell fake preparations through unwarranted advertising not in harmony with the label claims

have prompted the Department of Agriculture to issue a booklet entitled, "Fake Antiseptics and the Law," which exposes the methods of the fakers and tells the buyer how to beware. The booklet may be secured free of charge as long as the supply lasts by writing the Food, Drug, and Insecticide Administration, U. S. Department of Agriculture, Washington, D. C.

### **Turkey Business Now on a Stable Basis**

The raising of turkeys in the United States has been regarded as a side issue and a gamble, but increasing knowledge of parasitic diseases and their control is putting the industry on a more stable basis, says A. R. Lee, poultry husbandman of the U. S. Department of Agriculture. "There are now more than 3,500,000 turkeys on farms in this country, and they constitute  $1\frac{1}{2}$  per cent of all poultry. The 1929 crop of market turkeys indicated a decided advance in the business as compared with 1928. The estimated increase was about 9 per cent."

In recognition of the increased interest in turkeys and the need for further information concerning parasitic diseases, the U. S. Department of Agriculture has established a foundation flock of turkeys at the U. S. Range Experiment Station, Miles City, Mont. This work got under way last spring. Of 600 birds raised last season, 300 were selected for the breeding flocks. Everett E. Wehr, a research worker, is devoting all his time to the investigation of parasitic diseases. The work at this station will also include a study of the comparative cost of raising turkeys in confinement and on free range.

The flock was established by purchasing hatching eggs which were incubated artificially. The young birds were brooded in special brooder houses with clean yards until they were about eight weeks old. The investigators took these precautions to prevent infestations of the poults by such parasites as are introduced by adult turkeys. When large enough to range, the young poults were provided with large fenced lots and inexpensive shelters for roosting.

"Modern improvements in mechanical means of hatching and brooding have done much to develop the turkey industry," Mr. Lee says. "Day-old poults are now produced by commercial hatcheries and shipped by parcel post in much the same manner as baby chicks. Artificial brooding has been of particular value

in preventing losses from blackhead disease, which at one time threatened to destroy the industry."

Research workers have determined that this disease is caused by a parasite which can not live long in soil, but which may be transmitted in the egg of another parasite, the cecum worm. The blackhead parasite survives for long periods in the worm egg. As both turkeys and chickens may have blackhead, usually in a chronic form in mature birds, and as both may also have cecum worms, prevention of the acute, destructive form of blackhead in young turkeys calls for rearing on clean ground away from chickens and older turkeys.

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### Doctor Schalk to Ohio

Dr. Arthur F. Schalk has been elected to a professorship of preventive medicine in the College of Veterinary Medicine, Ohio State University, and will take up his new duties at Columbus, July 1, 1930. Dr. Schalk is an alumnus of Ohio State University and has been at the North Dakota Agricultural



DR. A. F. SCHALK

College since his graduation in 1908, first as assistant professor of veterinary science and later as full professor, following the removal of Dr. L. Van Es from North Dakota to Nebraska, several years ago. Dr. Schalk is planning to attend the International Veterinary Congress in London, and Governor Cooper, of Ohio, has appointed Dr. Schalk as the official delegate of the State of Ohio and of Ohio State University.



### Nostrums Do Not Stimulate Milk-flow

"The milk-production of dairy cows can not be increased above normal by the feeding of any drug or combination of drugs known to modern veterinary science," says Dr. H. E. Moskey, of the Food, Drug and Insecticide Administration.

It is well known to veterinarians, he says, that a decrease in milk-production is the result of many factors, such as chronic and acute infectious diseases, external and internal parasitic diseases, digestive disturbances and lack of a properly balanced ration. If there is a mineral deficiency in the ordinary diet, certain mineral elements, when added to the feed, may make up for the mineral deficiency. Products of this character can not, however, be represented as increasing milk-production above normal. Certain bitter stomachics may temporarily act as stimulants to the appetite. This does not mean, however, that the continued use of appetizers will increase milk-production.

A judgment, the notice of which was recently published by the Department of Agriculture, was secured against a product known as "Cow Tone, A Milk Producer," found misbranded under the federal Food and Drugs Act. The false and misleading statements appearing on the label and in the literature sent with the preparation claimed that the product, when fed to cows, "increases the milk," and "Nothing has been so consistently popular as Cow Tone in making milk because there is nothing else so consistently good. Takes the place of green pastures in making milk and making it pay." The preparation was lauded as "The Secret of Success in the Science of Milk Making." The manufacturers advised the consumer to "feed it to the average producing cow for the *extra* milk it will produce." They promised, "Give a tablespoonful twice a day to each cow and you will get returns in added milk production."

The court upheld the Department's allegation that these claims were false and misleading, in that the article contained no ingredient or combination of ingredients capable of producing the results promised. Analysis showed the product to consist of sodium chlorid, magnesium sulphate, sodium thiosulphate, potassium nitrate, and small amounts of nux vomica and fenu-greek.

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**Remember the dates—  
August 26-27-28-29**



## CHANGES RELATIVE TO VETERINARY OFFICERS

### Regular Army

Colonel W. Geo. Turner is relieved from further duty in the Office of the Surgeon General, Washington, D. C., effective on May 10, 1930, and assigned to duty at the Presidio of San Francisco, California.

Captain Daniel H. Mallan, Fort Benning, Ga., is designated as a student at the Command and General Staff School, Fort Leavenworth, Kans., for the 1930-1932 course, and directed to report to the commandant of that school between August 20 and August 31, 1930.

Colonel John A. McKinnon is relieved from duty at the Presidio of San Francisco, California, effective on or about July 15, 1930, and assigned to Fort Bliss, Texas, for duty.

Colonel Eugene J. Cramer is relieved from further duty at Fort Bliss, Texas, and assigned to duty at Headquarters, 1st Corps Area, Boston, Mass., effective about August 15, 1930.

Captain James E. Noonan is relieved from duty at Fort Ethan Allen, Vermont, effective on or about August 1, 1930, and assigned to Fort Riley, Kans., for duty.

Orders directing Captain Elwood L. Nye to proceed to Fort Douglas, Utah, for duty, have been changed so as to assign this officer to the Presidio of San Francisco, Calif., upon completion of temporary duty at the Medical Field Service School, Carlisle Barracks, Pa.

Lt. Colonel Burton A. Seeley is relieved from further duty at Fort Lewis, Washington, and assigned to duty at Fort Benning, Ga., effective on or about July 29, 1930.

Colonel William P. Hill is relieved from further duty at Fort Benning, Ga., and assigned to duty in the Philippine Department, to sail from New York City on or about August 20, 1930.

Lt. Colonel James R. Shand is relieved from further duty in the Philippine Department, effective upon completion of his present tour of foreign service, and assigned to duty at Fort Lewis, Washington.

Dr. Ralph W. Mohri (K. S. A. C. '29) has been appointed a second lieutenant in the Veterinary Corps, U. S. Army, to rank from April 7, 1930, and assigned to duty at Fort Benning, Ga.

Captain Jacob L. Hartman is relieved from further duty at Fort Bliss, Texas, and assigned to duty at Carlisle Barracks, Pa., to sail from San Francisco, Calif., on or about May 24, 1930.

The retirement of Captain Robert P. Kunnecke, for physical disability, is announced.

### Veterinary Reserve Corps

#### *New acceptances*

Anderson, Alexander Ralston. 2nd Lieut. 5956 Van Nuys Blvd., Van Nuys, Calif.

Heth, Chester Montague . . . Captain . . . 708 N. 3rd St., LaCrosse, Wis.

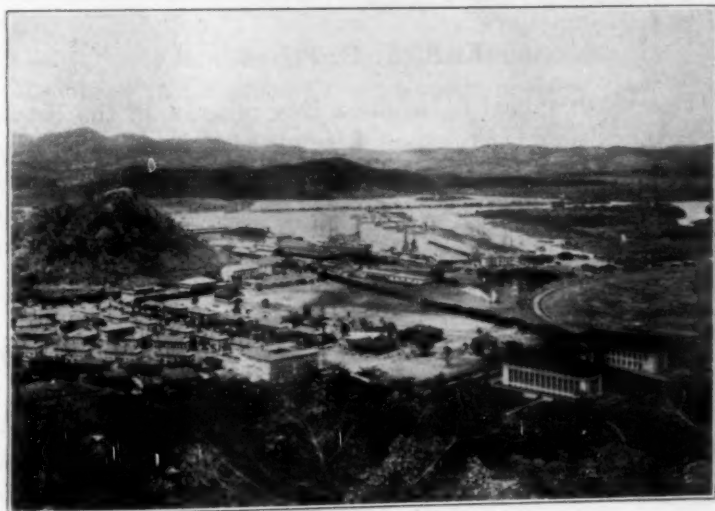
Shoaff, Walter Powell. . . . . 1st Lieut. . . . 217 Buena Vista, Paris, Ill.

### Promotions

Blackburn, Herbert L... To Lt. Colonel 713 Main St., Fort Worth, Texas.  
Sarde, Robert Miles..... Major..... P. O. Box 5, Camden, Del.  
Fish, Lynuel O..... Captain..... Spencer, Ind.  
Miller, Ezra Wm..... Captain..... 22 N. Braddock St., Winchester, Va.  
Wirtz, John Henry..... Captain..... 1604 Euclid Ave., Oklahoma City,  
Okla.

## International Veterinary Congress

In addition to the veterinarians and their wives whose names were listed in the January, 1930, issue of the JOURNAL, the following have made reservations and are planning to participate in the tour of Europe being arranged in connection with the International Veterinary Congress: Dr. H. D. Bergman, Ames, Iowa; Dr. and Mrs. John S. Buckley, College Park, Md.; Dr. W. E. Cotton, Bethesda, Md.; Dr. B. J. Crespo, Havana, Cuba; Maj. and Mrs. J. D. Derrick, Camp Marfa, Texas; Dr. and Mrs. E. M. Dobbs, Oakland, Calif.; Dr. Robert Graham, Urbana, Ill.; Dr. and Mrs. Geo. H. Hart, Davis, Calif.; Dr. F. M. Hayes, Davis, Calif.; Dr. and Mrs. C. C. Kinsley, Oakley, Kans.; Dr. and Mrs. J. H. Lenfestey, Lyons, Ohio; Dr. and Mrs. Hugh M. McConnell, Independence, Mo.; Dr. and Mrs. H. K. Miller, Mamaroneck, N. Y.; Dr. and Mrs. C. B. Outhier, Salinas, Calif.; Dr. and Mrs. Thomas E. Smith, Jersey City, N. J.; Dr. and Mrs. C. H. Stange, Ames, Iowa; Dr. and Mrs. F. L. Stein, Rochester, N. Y.; and Dr. Earl Sunderville, Ithaca, N. Y.



ALONG THE PANAMA PACIFIC LINE  
A view of Balboa, Pacific terminus of the Panama Canal

## COMMENCEMENT

### ONTARIO VETERINARY COLLEGE

The spring examinations of the Ontario Veterinary College, Guelph, Ontario, were completed on April 26, 1930, and graduation exercises were held on April 30.

The degree Bachelor of Veterinary Science was conferred at a special Convocation of the University of Toronto on fifteen graduates as follows: Alfred W. Bett, S. T. Bodendistel, Thomas M. Brank, Stanley L. Catley, R. R. Clendinning, Lyle M. Dingman, Michael J. Griffin, Arthur M. Johnston, Salo Jonas, J. C. MacLennan, K. M. Moore, Robert B. O'Brien, G. T. Price, Jr., W. E. Swales, and J. R. West.

Honors were awarded to members of the graduating class as follows:

#### *General Proficiency*

First Prize—G. T. Price, Jr., of Mahwah, N. J.

Second Prize—A. W. Bett, of Guelph, Ont.

Third Prize—R. B. O'Brien, of Windsor, N. S.

#### *Bacteriology*

Special Prize—G. T. Price, Jr., of Mahwah, N. J.

#### *Helen Duncan McGibray Honorarium*

M. J. Griffin, of South Hadley Falls, Mass.

#### *Andrew Smith Memorial Medal*

W. E. Swales, of Louth, England.

### K. S. A. C. Prizes

The seventh annual Recognition Day program of the Kansas State Agricultural College took place in the College Auditorium, Manhattan, May 2, 1930. At that time all winners of student prizes in the College received their prizes and awards. The names of the winners of the prizes offered the students of the Division of Veterinary Medicine are as follows:

#### *General Proficiency*

(Prizes offered by Dr. E. A. Schmoker, K. S. A. C. '17, of Seattle, Wash.)

First Prize (\$10.00).....Thomas Joy Leasure

Second Prize (\$5.00).....Wesley Watson Bertz

#### *Therapeutics*

(Prizes offered by Jensen-Salsbery Laboratories, Kansas City, Mo.)

First Prize (\$10.00).....Wayne Otho Kester

Second Prize (\$5.00).....Andrew Lafayette McBride



*Pathology*

(Prize of \$7.50 offered by the Veterinary Faculty of the College)  
Thomas Joy Leasure

*Physiology*

(Prize of \$7.50 offered by the Veterinary Faculty of the College)  
John Lester George

In addition to the prizes in the Division of Veterinary Medicine three of the senior students, Wesley Watson Bertz, Thomas Joy Leasure and Henry Devore Smiley, have been elected to membership in the Gamma Sigma Delta, the honor society in agriculture, and two senior students, C. L. Guinn and H. D. Smiley, and two junior students, Fred Storz and Dale Suplee, have been elected to membership in the Scabbard and Blade, the honor society in military science.

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### **Oklahoma Has County Free From Tuberculosis**

The combined efforts of cattle-owners in Canadian County, Oklahoma, and a well-organized force of veterinary inspectors resulted, April 1, in the establishment of this county as the State's first modified accredited area. This is one of the 20 new counties in the United States added, during March, to the list of areas having not more than 0.5 per cent of bovine tuberculosis as shown by the tuberculin test. The total number of counties from which tuberculosis has been practically eliminated is now 929, according to Dr. A. E. Wight.

The task of applying the tuberculin test to the County's 39,000 cattle was accomplished by means of area work. The degree of infection in Canadian County was approximately 0.3 per cent, which is well within the official requirement.

The cattle in Canadian County consist of dairy cows, mixed farm herds, and range cattle. The local demand for raw milk, which is the main dairy product marketed, made accreditation of the entire area particularly desirable. A special request from the County Commissioners to begin work in Canadian County resulted in the concentration of the work in this part of the State as soon as state funds were made available.

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### **Oklahoma Needs Practitioners**

Dr. Walter Hyde Martin, secretary of the Oklahoma State Board of Veterinary Medical Examiners, reports that there are twenty or more good locations in Oklahoma having no qualified practitioners at the present time. Dr. Martin may be addressed at 101 South Evans, El Reno, Okla.



## **NORTHWESTERN OHIO VETERINARY MEDICAL ASSOCIATION**

The twenty-third annual meeting of the Northwestern Ohio Veterinary Medical Association was held at the Commodore Perry Hotel, Toledo, February 20, 1930. About 100 veterinarians from Ohio and Michigan were in attendance. Dr. Charles E. Petteys, of Weston, Ohio, presided.

The following program was presented:

"Publicity for the Individual Practitioner," Dr. H. Preston Hoskins, Secretary-Editor, A. V. M. A., Detroit, Mich.

"Recent Observations in Stomach Worms in Sheep," Dr. R. E. Rebrassier, Ohio State University, Columbus, Ohio.

"Small-Animal Practice," Dr. J. F. Planz, Akron, Ohio.

"Poultry Practice," Dr. Sivert Eriksen, Jensen-Salsbery Laboratories, Kansas City, Mo.

In his address on publicity, Dr. Hoskins exhibited specimens of both ethical and unethical forms of advertising and publicity upon the part of individual veterinarians. He also spoke on what had already been done in the way of organized publicity for the veterinary profession by several veterinary associations in different parts of the country. He pointed out that a publicity campaign that is sponsored by a veterinary association is much more likely to be done ethically than sporadic efforts to accomplish the same end by individual veterinarians.

Dr. Rebrassier reported the results of some very interesting experiments in connection with the control of stomach worms in sheep and was able to show in dollars and cents just what this important sheep parasite was costing the sheep industry in Ohio and elsewhere.

Dr. Planz related some very interesting experiences in connection with his small-animal practice. This was the second time that Dr. Planz has appeared on a program of this Association for the same subject within a few years and this fact alone is an indication of how well his colleagues like to hear him talk.

Dr. Eriksen gave a very practical talk on poultry practice and covered most of the important infectious and parasitic diseases of poultry. His many years of experience in this particular field eminently qualified him to talk on this subject and answer the many questions put to him by the veterinarians present.

Local arrangements were in charge of Dr. Reuben Hilty, of Toledo. Dr. Warren P. S. Hall, of the Toledo Board of Health, was unanimously elected President for 1930 and Dr. F. A. Lambert was re-elected Secretary-Treasurer in spite of his strenuous objections to being returned to office.

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### VETERINARY MEDICAL ASSOCIATION OF NEW YORK CITY

The regular monthly meeting of the Veterinary Medical Association of New York City was held Wednesday evening, March 5, 1930, at the Academy of Medicine Bldg., 103rd St. and 5th Ave. Dr. R. J. Garbutt, President, presided and called the meeting to order at 8:30 p. m.

Dr. C. V. Noback, of the New York Zoological Park, gave a very interesting talk, illustrated by numerous lantern-slides, on the animals in captivity in the Bronx Zoo. He told of the rigid quarantine imposed on animals, especially the hoofed varieties, entering this country. Most newly arrived animals, Dr. Noback reported, are infested with numerous parasites. Among the slides shown were several of a young gorilla which had been raised in captivity and which is now thriving and in good condition.

Dr. Adolph Eichhorn, of Pearl River, then gave a short talk on vaccination against canine distemper by the Laidlaw-Dunkin method. Dr. Eichhorn said that many of the so-called breaks were due to the animals having been infected with distemper just previous to vaccination. He urged the careful examination of all dogs presented for vaccination and agreed that a dose of serum, followed in ten to fifteen days by vaccine, is the safest procedure to follow. Drs. E. B. Ackerman, G. W. Little, H. K. Miller and R. H. Spaulding agreed on the use of serum before vaccination.

Drs. Skelton, C. E. Flaxman and Wm. H. Dohm were elected to membership.

Dr. Eichhorn extended to the members of the Association an invitation to meet with the Hudson Valley Veterinary Medical

Association at Pearl River, on May 14. The invitation was accepted, subject to the approval of the Program Committee.

A rising vote of thanks was extended Drs. Noback and Eichhorn.

JOHN E. CRAWFORD, *Secretary*.

### **SOUTHEAST GEORGIA VETERINARY ASSOCIATION**

The eighth quarterly meeting of the Southeast Georgia Veterinary Association was held at the City Hall, Vidalia, March 5, 1930. The Association has a membership of 25, and 16 of these were in attendance at the meeting. Drs. A. L. Hirleman, L. J. Kepp and L. A. Mosher, of Atlanta, and Dr. R. C. Barnes, of Claxton, were added to the roll at this meeting.

The program included the following:

"Disease Control in Animals," Dr. A. L. Hirleman, Atlanta.

"General Farming Plus Live Stock," J. A. Henson, Alamo.

"The Dairy Cow," Dr. Peter F. Bahnsen, Americus.

"Veterinary Practice," Dr. R. S. Duffell, Eastman.

"Live Stock from the Farmer's Viewpoint," Mr. Clifford McBride.

"Marketing of Live Stock," Judge Max L. McRae.

"The Food Animal and Its Relation to Public Health," Dr. H. G. Bailey, Savannah.

The following officers were elected: President, Dr. R. S. Duffell, Eastman; vice-president, Dr. W. B. Hirleman, Atlanta; and secretary-treasurer, Dr. Hugh F. Arundel, Statesboro.

HUGH F. ARUNDEL, *Secretary*.

### **MIAMI VALLEY VETERINARY ASSOCIATION**

About twenty-five veterinarians from Clark, Darke, Miami, Montgomery, Champaign and Greene counties, Ohio, attended the meeting of the Miami Valley Veterinary Association at Hotel Shawnee, Springfield, Ohio, March 5, 1930.

Dr. C. H. Decker, of Columbus, in charge of tuberculin testing in Clark County, addressed the meeting on the progress being made in the eradication of bovine tuberculosis in his territory. The balance of the time was devoted to discussions of undulant fever and other communicable diseases. Local arrangements were in charge of Dr. Bruce L. Runyan, of Springfield, president of the Association.

### **CHICAGO DIVISION, NATIONAL ASSOCIATION OF B. A. I. VETERINARIANS**

The veterinarians of the Chicago force of the Bureau of Animal Industry engaged in meat inspection held their regular monthly



meeting, Monday, March 10, 1930, at one of the local packing-houses under the direction of Dr. Herman Busman, inspector in charge of meat inspection at the Chicago station.

The meeting was one of the most interesting that has been held in recent years by the federal veterinarians of Chicago. The attendance was unusually large, as practically every veterinarian on the Chicago force was present, as well as several distinguished visitors from the medical profession.

The principal speaker of the meeting was Dr. M. L. Blatt, Professor of Pediatrics, University of Illinois Medical School; Chief of Staff of Pediatrics, Cook County Hospital; and Medical Examiner, Illinois National Guard. Dr. Blatt gave a most interesting and instructive talk on the subject of rabies in children and illustrated his talk with several reels of motion pictures made by himself, showing numerous children affected with rabies as the result of being bitten by rabid dogs during the rabies epidemic in Chicago about two years ago. It was really very pitiful and heart-breaking to see these young, innocent children, ranging from one to twelve years of age, manifesting the terrible and unmistakable signs of furious rabies, from which there is no hope of cure. Everyone present could not help but feel convinced that when a person is bitten by a rabid animal, it is a serious matter which calls for immediate attention by a physician experienced in the treatment of rabies.

Dr. Blatt, in his thorough and masterful discussion of rabies, impressed on his audience that bites about the face are the most dangerous and treatment must be instituted immediately. No time should be lost by waiting to see if the dog or cat, which did the biting, develops rabies, but begin the antirabic treatment at once. Even then the treatment may be of no avail because bites from rabid animals about the face, especially lacerated wounds, may produce symptoms of rabies in the person bitten in less than twelve days, the time necessary for the antirabic vaccine to act in order that it might be of value in preventing the symptoms of rabies from developing in the person bitten. Dr. Blatt also stated that the farther from the brain that the bite occurs, the longer will be the period of incubation. This is especially so if the bite takes place through articles of clothing about the extremities. Dr. Blatt concluded his remarks with the advice to give antirabic treatment immediately to all persons bitten about the face by any dog or cat, whether the animal is to be kept under observation or not; also to begin antirabic treatment

at once when a person is bitten by a stray dog that cannot be kept under observation. When a bite occurs elsewhere than on the face, by an animal that can be kept under observation, the antirabic treatment may be safely delayed pending the veterinarian's report whether the dog was rabid or not.

Other speakers at this meeting were Dr. Lipman, Medical Director, Swift & Co., Dr. Herman Busman and Dr. L. Enos Day. At out next several meetings, some of the papers pertaining to meat inspection which were presented at the Federal Meat Inspection Service Conference, held in Chicago, July 8-9, 1929, will be reviewed and discussed.

J. S. BENGSTON.

### OTTAWA SOCIETY OF COMPARATIVE MEDICINE

At a meeting held in Ottawa, Canada, on March 15, 1930, veterinarians representing the different branches of the profession organized the Ottawa Society of Comparative Medicine, which will meet every six weeks for the discussion of subjects relating to veterinary science. The veterinary profession in Ottawa is represented by six different branches, *i. e.*, departmental executive heads, federal field inspectors, federal meat inspectors, city food inspectors, practitioners and pathologists. The aim of the new organization is to encourage a closer relationship between the different branches and to provide a medium for the exchange of opinions on subjects of interest to the profession as a whole.

The Society is a supplement to the Central Canada Veterinary Association and, in order that it will not in any way conflict with the latter organization, the president of the Central Canada Veterinary Association will automatically become president of the Ottawa Society of Comparative Medicine and membership will be limited to those in good standing in the Central Canada Veterinary Association. Therefore, Dr. C. M. Higginson, practitioner, Hawkesbury, Ontario, became president; Dr. Chas. A. Mitchell was elected vice-president, and Dr. F. A. Humphreys, secretary-treasurer.

Following the organization meeting, a paper was given by Dr. C. W. McIntosh, of the Animal Diseases Research Institute, on "Thermal Reactions Following the Injection of Intradermal Tuberculin," and Dr. R. C. Duthie, also of the Animal Diseases Research Institute, gave a paper relating his experiences with "Equine Influenza and Allied Infections," as met with in a

remount depot during the War. Both papers were much appreciated and were followed by a lengthy discussion.

F. A. HUMPHREYS, *Secretary*.

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### HILLSDALE COUNTY VETERINARY MEDICAL SOCIETY

A joint meeting of the Hillsdale County (Mich.) Veterinary Medical Society and the Hillsdale County Medical Society was held at Hillsdale, March 25, 1930. The program was devoted to undulant fever. The speakers included Dr. I. F. Huddleson and Dr. B. J. Killham, of Michigan State College, Dr. A. B. Curtice, of Hillsdale, and Dr. D. W. Fenton, of Reading.

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### EAST TENNESSEE VETERINARY MEDICAL ASSOCIATION

The quarterly meeting of the East Tennessee Veterinary Medical Association was held at Knoxville, April 12, 1930. The program was devoted to a discussion of live stock sanitary control measures and the relation of the veterinarian to the live stock interests in Tennessee. Dr. W. A. Jones, of Johnson City, presided and Dr. R. E. Baker, of Morristown, officiated as Secretary. The next meeting will be held in Chattanooga and at that time it is planned to organize a tri-state association of veterinarians located in northern Georgia, northern Alabama and eastern Tennessee.

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### McLEAN COUNTY VETERINARY MEDICAL SOCIETY

The annual meeting of the McLean County (Illinois) Veterinary Medical Society was held at El Paso, Ill., April 18, 1930. Farm advisors of Woodford, Livingston, Marshall-Putnam and McLean counties were guests of the 28 veterinarians in attendance.

Dr. Robert Graham, of the University of Illinois, addressed the meeting and demonstrated methods for testing cattle for Bang disease. Practicing veterinarians in Illinois are being taught the technic of the rapid method. Upon demonstrating their ability to perform this test accurately, the veterinarians are accredited to do such work by the State Department of Agriculture. Dr. Graham also pointed out the relationship between Bang disease in cattle and undulant fever in man.

Dr. W. H. Welch, State Veterinarian, was present and discussed some of the new regulatory measures recently adopted by the State Department of Agriculture, including one to become effective May 15, covering importation of cattle into Illinois and the freedom of such cattle from infection with the Bang organism.

The evening session was held at the High School where Phil S. Haner, superintendent of the State Department of Plant Industry, was the principal speaker. The farm advisors who were present made short addresses and indicated their desire to cooperate with veterinarians. Dr. H. D. Chamberlain, president of the Illinois State Veterinary Medical Association, was present and made a brief address. Dr. J. S. Koen outlined the program of the recently appointed A. V. M. A. Committee on Agricultural Extension Service.

Election of officers resulted as follows: President, Dr. C. L. Lehman, Flanagan; vice-president, Dr. W. V. Nesbitt, Lincoln; secretary-treasurer, Dr. J. S. Koen, Bloomington.

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### MASSACHUSETTS VETERINARY ASSOCIATION

The annual meeting of the Massachusetts Veterinary Association was held at the Elks Hotel, Boston, on April 23, 1930. A banquet was served at 6:30 with about forty members present. During the banquet, music was provided and community singing enjoyed by those present.

Dr. E. A. deVarences, President, opened the regular meeting and considerable routine business was disposed of. The annual report of the Secretary-Treasurer showed the Association to be in much better financial condition than it has been for some years, with a balance of approximately \$1,000 in the treasury.

Election of officers for the year 1930-1931 resulted as follows: President, Dr. Wm. J. Hennessey, Worcester; 1st vice-president, Dr. R. S. Youmans, Lawrence; 2nd vice-president, Dr. J. Dwight Pierce, Springfield; secretary-treasurer, Dr. H. W. Jakeman, Boston.

Upon completion of the business session, the President introduced Dr. F. H. Miller, of New York, the guest speaker of the evening. Dr. Miller presented a paper entitled, "Mistakes We Make," and brought out a great many points which, if carried out by the profession, doubtless would result in better conditions existing within our ranks. One of the points which Dr. Miller emphasized was the lack of cooperation between older men of



the profession and recent graduates. He pointed out that it would often be of decided advantage to call the younger men in for consultation work which would not only often result in older graduates receiving information concerning the latest theories and ideas on certain diseases and treatments, but it would give the younger man a feeling of confidence and make him feel more at home in his chosen profession.

In connection with the consultation work, Dr. Miller felt that there is entirely too little of this carried on by veterinarians in most localities. He felt that consultations were not only of benefit to the veterinarians involved in any particular case, but had a wider-reaching effect in fostering the confidence of the general public.

Another point upon which Dr. Miller dwelt was that the practicing veterinarian should not be too ready to accept the articles which are published from time to time in veterinary journals or even the statements made in various text-books.

Following Dr. Miller's paper, he discussed a number of the more common ailments of small animals and referred to satisfactory treatments. A great many questions were asked and a general round-table discussion closed a very enjoyable and successful meeting

H. W. JAKEMAN, *Secretary.*

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### NORTH CENTRAL IOWA VETERINARY MEDICAL ASSOCIATION

The annual meeting of the North Central Iowa Veterinary Medical Association was held at the Wahkonsa Hotel, Fort Dodge, April 23, 1930. The meeting was one of the best in the history of the Association. The attendance was large, in the neighborhood of 75 veterinarians being present, and the interest which was manifested in the program was very gratifying to everybody concerned.

One of the outstanding papers presented was that by Dr. L. W. Fox, of Algona, entitled, "Diseases of Swine from the Practitioners Viewpoint." This paper dealt particularly with the prophylactic treatment of swine to protect them against hog cholera. Dr. Fox emphasized the necessity of adequate dosage of serum and virus, bringing out the fact that the minimum dosage as prescribed on labels of containers of anti-hog cholera serum is that taken from the regulations of the Bureau of Animal

Industry and that the veterinarians regularly should use larger doses.

Dr. F. H. Kelly, of Goldfield, presented a very interesting paper on "Bot Fly Eradication." Dr. Kelly explained the work being done in Wright County (Iowa) in an effort to eradicate bot flies. It might be interesting to practitioners in this part of the country, at least, to know that bot fly eradication work comes at a time of year when other practice may not be large.

Dr. C. N. McBryde, in charge of the U. S. Bureau of Animal Industry experiment station at Ames, presented a preliminary report on "The Absorption of Anti-Hog Cholera Serum." This paper was illustrated with lantern-slides and dealt particularly with the absorption of clarified anti-hog cholera serum as compared with defibrinated blood serum.

Dr. Karl Fr. Beller, of the Reichsgesundheitsamtes, who is visiting laboratories in this country, attended the meeting and expressed himself as being greatly interested in the problems confronting the veterinarians in the United States.

At the business session, the following officers were elected for the ensuing year: President, Dr. J. J. Williams, Fort Dodge; vice-president, Dr. R. C. Ball, Titonka; and secretary-treasurer, Dr. H. J. Shore, Fort Dodge.

In the evening the dinner dance was tendered the members, their families and friends through the courtesy of the Fort Dodge Serum Co.

The program was well-rounded out with interesting case reports presented by Dr. H. B. Treman, of Rockwell City, and an address on the subject of "The Iowa State Veterinary Association," by Dr. E. R. Truax, of Sac City, president for the current year.

H. J. SHORE, *Secretary.*

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### ILLMO VETERINARY MEDICAL ASSOCIATION

The annual meeting of the Illmo Veterinary Medical Association was held at Edwardsville, Ill., April 24, 1930. The business session was held at the Court House and a clinic was conducted at the hospital of Dr. A. A. Moore. About fifty veterinarians were in attendance. The following program was presented:

"Blood Chemistry in Veterinary Practice," Dr. J. H. Weiner, Kansas City, Mo.

"Control of Abortion Disease in Cattle," Dr. W. H. Welch, Springfield, Ill.

"Swine Diseases," Dr. H. R. Schwarze, East St. Louis, Ill.

"Canine Distemper Control," Dr. O. A. Meyer, East Alton, Ill.

The election of officers resulted as follows: President, Dr. A. A. Moore, Edwardsville, Ill.; vice-president, Dr. A. F. Faust, of St. Louis, Mo.; secretary, Dr. E. O. Brown, Belleville, Ill.; treasurer, Dr. Wm. Beckman, St. Louis, Mo.

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### TRI-COUNTRY VETERINARY ASSOCIATION

The Tri-County Veterinary Association, composed of veterinarians located in Hillsdale, Calhoun and Lenawee counties, Michigan, met at the home of Dr. F. M. McConnell, Litchfield, April 30, 1930. Dr. C. H. Clark, State Veterinarian, was the principal speaker and addressed the meeting on "The Control of Infectious Abortion." After the meeting the veterinarians visited the Litchfield Creamery. Dr. McConnell, who acted as host, is president of the Association.

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### MICHIGAN-OHIO VETERINARY MEDICAL ASSOCIATION

The annual meeting of the Michigan-Ohio Veterinary Medical Association was held at the Court House, Adrian, Michigan, on May 1, 1930.

There were thirty-three members and visitors present. The business session was called to order by the President, Dr. C. H. Hoffmire, of Adrian. Following the usual business matters, the election of officers resulted as follows: Dr. C. H. Hoffmire was re-elected President; Dr. A. H. DeGroot, Dundee, Mich., Vice-president; and Dr. E. C. W. Schubel, Blissfield, Mich., Secretary-Treasurer.

The first address was made by Dr. Alvin Broerman, of the State Serum Institute, Reynoldsburg, Ohio, on "Poultry Diseases." His talk was most enlightening on recent findings on disease control. He emphasized the dire need of controlling pullorum disease. He brought out the results of experiments showing that fowl-pox is being spread by mosquitoes.

Dr. H. Preston Hoskins evidently has spent many long hours, weeks and months in gathering data on his subject "Ethical Advertising." It pointed out to the practicing veterinarian how he may obtain more publicity without violating professional ethics.

Dr. B. J. Killham, who recently took over the work of Extension Specialist, at Michigan State College, presented his subject, "The Abortion Disease Extension Project," in such a

manner that it left no doubt in the minds of the veterinarians that he stands for the profession at all times, while the program is being planned for the control of abortion disease.

Following the meeting, twenty-three of the veterinarians remained in Adrian to dine together as guests of Dr. W. K. York, of Lima, Ohio.

E. C. W. SCHUBEL, *Secretary*.

### ARKANSAS VETERINARY MEDICAL ASSOCIATION

The annual meeting of the Arkansas Veterinary Medical Association was held in the Marion Hotel, Little Rock, May 6, 1930. The meeting was conducted concurrently with the annual meeting of the Southwest Tuberculosis Association which was in session two days, May 5-6. The business meeting was held during a luncheon on May 6. A number of veterinarians from Oklahoma, Texas, Mississippi and Louisiana were visitors at the meeting.

The meeting was called to order by President R. W. Williams, of Eldorado. Dr. Theobald Smith was introduced and gave a brief history of the organization of the U. S. Bureau of Animal Industry and of his work on Texas fever. Dr. Smith was one of the three charter members.

Dr. A. E. Wight, chief of the Tuberculosis Division, U. S. Bureau of Animal Industry, was present and expressed his pleasure at having the opportunity to return to Arkansas, the field of his earlier endeavors. Dr. C. C. Hisel, state veterinarian of Oklahoma, gave a brief review of the conduct of tuberculosis eradication in his State. Dr. N. F. Williams, state veterinarian of Texas, addressed the meeting and stressed the importance of ability and integrity in dealing with the public, as well as in interstate inspections.

President Williams gave a brief talk on the veterinarian as a food inspector, which position Dr. Williams holds at Eldorado. He then presented to the members of the Association Dr. L. J. Allen, B. A. I. Inspector-in-Charge of Oklahoma, Dr. H. L. Darby, B. A. I. Inspector-in-Charge of Texas, Dr. G. B. Bradshaw, state veterinarian of Mississippi, Dr. H. Robbins, B. A. I. Inspector-in-Charge of Mississippi, Dr. Toby, of Borden Milk Co., Dr. R. L. Cuff, of Kansas City, and other visitors.

Dr. Earle L. Kittrell, of Augusta, was elected president; Dr. W. L. Bleecker, of Fayetteville, vice-president; and Dr. W. C. Glockner, of Little Rock, secretary-treasurer.

W. C. GLOCKNER, *Secretary-Treasurer*.



# NECROLOGY



## ROBERT C. MOORE

In the death of Robert C. ("Daddy") Moore, at his home in St. Joseph, Mo., on April 30, 1930, the veterinary profession of this country has been robbed of another colorful figure. Dr. Moore had been ill for several months and was in his 78th year. He was really one of the pioneers of the veterinary profession in the Middle West and few veterinarians have enjoyed a wider professional acquaintance.

Dr. Moore was a native of Ohio. At the age of sixteen his family moved to DeKalb County, Missouri, and three years later to Holton, Kansas. Following the completion of his veterinary course at the Chicago Veterinary College, in 1887, Dr. Moore practiced for about four years in Holton, Kans., and for one year in Galveston, Texas. In 1892, he became associated with the Kansas City Veterinary College and in 1898 was elected President of that institution, serving in that capacity until 1912. At that time he removed to Fort Scott, Kansas, for the purpose of regaining his health. Several years later, he resumed veterinary educational work in the capacity of President of the St. Joseph Veterinary College, a position he retained until 1923, when the institution closed. In 1924, Dr. Moore joined the staff of the Jensen-Salsbery Laboratories and was placed in charge of their distributing depot at St. Joseph.

Dr. Moore joined the A. V. M. A. in 1899. He was chairman of the Finance Committee, 1901-1902, and a member of the same committee, 1909-1910. He was elected to a vice-presidency in 1907. He was a member of the Committee on Intelligence and Education from 1916 to 1918. He was a member (1915-1916) and later chairman (1918-1919) of the Committee on History. Dr. Moore was a charter member of the Kansas Veterinary Medical Association and of the Missouri Valley Veterinary Association.

Funeral services were held at St. Joseph, May 1. A large body of veterinarians from the Middle West paid their last respects to

Dr. Moore by attending his funeral. Burial was at Holton, Kansas. Dr. Moore is survived by his widow and one daughter, two sisters and one brother.

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### FENNER CARLTON SMITH

Dr. Fenner C. Smith, of Jamestown, N. Y., died July 26, 1929, after an illness of about a week.

Born at Kent, N. Y., September 9, 1889, Dr. Smith attended Albion (N. Y.) High School and then entered Cornell University. He was graduated in 1918 and located at Sherman, N. Y., later removing to Jamestown. Dr. Smith joined the A. V. M. A. in 1919. He was a member of Alpha Psi Fraternity. His widow (nee Florence Sutton) survives him.

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### F. E. JOHNSON

Dr. F. E. Johnson, of Lincoln, Nebr., died at his home, February 19, 1930, following an illness of several weeks. He was a graduate of the Kansas City Veterinary College, class of 1904, and was a member of the State Veterinarian's staff at the time of his death. For several years, Dr. Johnson was in the service of the U. S. Bureau of Animal Industry on various assignments.

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### HENRY BOWER

Dr. Henry Bower, of Perkiomenville, Pa., died March 13, 1930. He was a graduate of the University of Pennsylvania, class of 1897.

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### LYNN R. CANTWELL

Dr. L. R. Cantwell, of Lincoln, Nebraska, died in a local hospital, April 9, 1930, following an operation for appendicitis.

Born January 25, 1886, at Ayr, Nebraska, Dr. Cantwell removed to Alliance, Nebraska, as a boy, and attended grade and high schools there. He then entered the Kansas City Veterinary College, and was graduated in 1916. He returned to Alliance to practice, later going to Hyannis, same state. Leaving practice about 1919, he entered the employ of the Nebraska Bureau of Animal Industry as field veterinarian. He served one term as State Veterinarian, during the administration of Governor Bryan.

Dr. Cantwell joined the A. V. M. A. in 1919. He was a member of the Alpha Psi Fraternity. Surviving him are his widow, one son and his parents.

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**EDWARD E. MORIARITY**

Dr. Edward E. Moriarity died in the Miami Valley Hospital, Dayton, Ohio, March 21, 1930. He was a graduate of the Ohio State University, class of 1914, and was a field veterinarian with the Ohio State Department of Agriculture.

Dr. Moriarity joined the A. V. M. A. in 1918. He was a member of Alpha Psi Fraternity. One brother and one sister survive him.

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**R. G. HOLLAND**

Dr. R. G. Holland, of Wellington, Ohio, died at his home, April 24, 1930, following a stroke of apoplexy. He was 73 years of age and a life-long resident of his community. He was a graduate of the Ontario Veterinary College, class of 1887.

Dr. Holland was a cousin and boyhood companion of the late Myron T. Herrick, Ambassador to France. As boys they lived on adjoining farms. Active in civic affairs, Dr. Holland served as councilman of Wellington. He is survived by one sister.

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**RICHARD GEORGE DINGMAN**

Dr. Richard G. Dingman, of Prophetstown, Illinois, died suddenly, April 29, 1930, of heart trouble, while on a professional call near Tampico.

Born near Stratford, Ontario, September 12, 1865, Dr. Dingman came to the United States at the age of 18. He returned to Canada for his veterinary education and was graduated from the Ontario Veterinary College in 1894. For four years he practiced at Geneseo and Buda, Ill., locating in Prophetstown in 1898.

Dr. Dingman is survived by his widow and two sons, both veterinarians, Dr. R. Paul Dingman (Ont. '27) and Dr. Lyle Dingman (Ont. '30). The latter received his degree the day following his father's death.

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**JOSIAH C. ROBBINS**

Dr. Josiah C. Robbins, of Bay Shore, Long Island, N. Y., died of pneumonia, May 3, 1930. He was born at Bay Shore, October 21, 1896. Graduating from Bay Shore High School, he entered the University of Pennsylvania and completed the veterinary course in 1926. Dr. Robbins joined the A. V. M. A. the same year. He was engaged in general practice.

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**WILLIAM H. WILKE**

Dr. William H. Wilke, of Merrill, Wis., died of pneumonia, at his home, May 4, 1930.

Born at Elk Grove, Ill., September 18, 1882, Dr. Wilke moved to Union, Ill., when 14 years of age, and remained there until about ten years ago, when he removed to Merrill, Wis. He was a graduate of McKillip Veterinary College, class of 1907. He is survived by his widow, three brothers and six sisters.

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**OSCAR I. HOLLOWAY**

Dr. Oscar I. Holloway, of Piqua, Ohio, died May 7, 1930, following an automobile accident two days before, in which he received a fractured skull.

Born in Piqua, April 21, 1892, Dr. Holloway attended local schools and then entered Ohio State University. He was graduated in 1917. He served overseas during the World War, as first lieutenant in the 324th Field Artillery. After returning from France, Dr. Holloway entered practice at St. Paris, Ohio. Six years ago he removed to Piqua, where he conducted a hospital in connection with his practice.

Dr. Holloway was a member of the Ohio State Veterinary Medical Association and Alpha Psi Fraternity. He is survived by his widow, one son, his parents, two brothers and one sister.

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**EDWARD P. DOWD**

Dr. Edward P. Dowd, of Worcester, Mass., died May 14, 1930, aged 62 years. Two years ago, ill health compelled him to give up active practice. The immediate cause of death was cerebral hemorrhage.

A native of Boston, Dr. Dowd attended public schools and then entered Harvard University. He received his veterinary degree in 1891, and started practice in Boston. In 1899, he removed to Worcester, where he remained until his death.

Dr. Dowd is survived by his widow (nee Nellie P. Burrison).

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**PERSONALS**

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**MARRIAGES**

Dr. Harry Hayward Taylor (U. P. '28), of Trenton, N. J., to Miss Lillian L. Hibbard, of Philadelphia, May 5, 1930.

Dr. A. E. Lauts (K. S. A. C. '28), of Neligh, Nebr., to Miss Helen Turnbull, of Parnee City, Nebr., March 12, 1920.



Dr. J. N. McIlnay (K. S. A. C. '28), of Lincoln, Nebr., to Miss Vera Mae Graham, of Lincoln, Nebr., April 4, 1930, at Lincoln.

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### BIRTHS

To Dr. and Mrs. Fred Boerner, of Philadelphia, Pa., a daughter, Joan, in February, 1930.

To Dr. and Mrs. Jas. F. Adey, of Topeka, Kans., a daughter, Janet Kathleen, March 10, 1930.

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### PERSONALS

Dr. Ed. S. Phillips (K. C. V. C. '16), has removed from Ingalls, N. C., to Latta, N. C.

Dr. H. J. McCauley (Chi. '18) has removed from Beresford, S. Dak., to Tripp, S. Dak.

Dr. G. W. Noble (Chi. '04), formerly of Lynwood, Calif., has removed to Artesia, Calif.

Dr. O. B. Neely (Iowa '24) reports a change of address, from Knoxville to Winchester, Tenn.

Dr. W. C. Outhier (San Fran. '04), of Anaheim, Calif., reports his removal to Salinas, Calif., June 1.

Dr. A. R. Lantz (K. C. V. C. '13), of Woodbine, Iowa, has been elected a member of the City Council.

Dr. C. C. Hunt (Ind. '10), formerly of Chicago, Ill, is now located at 414 Kenilworth Ave., Toledo, Ohio.

Dr. John R. Scott (Iowa '24), formerly of Highmore, S. Dak., is now located at 723 Sixth St., Rapid City, S. Dak.

Dr. Sam Crouch (McK. '20), formerly of Los Angeles, Calif., is now at 1234 N. San Fernando Rd., Glendale, Calif.

Dr. F. A. Bonnstetter (Iowa '24) has resigned from the U. S. Bureau of Animal Industry and located at Algona, Iowa.

Dr. George W. Ragan (S. W. '15) has removed from Wichita Falls, Texas, to Groesbeck, Texas. Address 205 N. Commerce St.

Dr. R. H. Tesdell (Chi. '17) has removed from Huxley, Iowa, to Ogden, Iowa, where he is now engaged in general practice.

Dr. E. H. Beretta (Iowa '29) has removed from Cresco, Iowa, and is now located at Solon, Iowa, engaged in general practice.

Dr. G. R. Tomlinson (Ont. '03-Chi. '04), formerly of St. Paul, Minn., gives his new address as Bald Eagle Lake, White Bear, Minn.

Dr. G. P. Statter (Ont. '97-McK. '99), of Sioux City, Iowa, plans to go to Toronto this month with the Abu Bekr Mounted Patrol.

Dr. H. R. Henthorn (K. C. V. C. '18) is now manager of the Sioux City, Iowa, branch of the Norden Laboratories, of Lincoln, Nebr.

Dr. D. E. Ellerbrock (Cin. '15), formerly of Lima, Ohio, has moved to Cleveland Heights, and opened a veterinary hospital at 13216 Cedar Road.

Dr. J. R. Stiffer (U. S. C. V. S. '11), deputy state veterinarian, has been assigned to Marion County (Ky.) and vicinity, with headquarters at Lebanon, Ky.

Dr. John P. Hutton (O. S. U. '11) acted as secretary of the eighth annual Michigan State College R. O. T. C. Horse Show, held at East Lansing, May 30-31.

Dr. John N. McIlroy (K. S. A. C. '28), who is now with the Nebraska Bureau of Animal Industry as field veterinarian, has removed from Ashland, Nebr., to Lincoln.

Dr. C. C. Wadsworth (O. S. U. '11), of Mansfield, Ohio, addressed local Troop 1, Boy Scouts, on April 21, his subject being "The Care and Treatment of Pets."

Dr. E. S. Carter (K. C. V. C. '14), of Springfield, Mo., recently completed the erection of a new veterinary hospital at a cost reported to be in the neighborhood of \$25,000.

Dr. Richard Klaiber (Cin. '10), of West Carrollton, Ohio, was a patient at St. Elizabeth's Hospital, Dayton, Ohio, recently on account of having to undergo an operation.

Dr. E. R. Cushing (Conn. '20), of Plainfield, N. J., has taken a new location at 947 Prospect Ave. He was formerly located at 1 Woodbine Avenue, at the corner of Park Avenue.

Dr. B. L. Taylor (K. S. A. C. '20), formerly of Emmett, Idaho, has removed to Monroe, Wash., where he divides his time between general practice and work for the Carnation Stock Farms.

Dr. Max Siereveld, Jr. (Cin. '09) has accepted a position with the Hartford Live Stock Insurance Company, Chicago, Ill., following his resignation from the Veterinary Corps of the U. S. Army.

Dr. J. A. Campbell (K. C. V. C. '17), formerly of Williamsville, Ill., is located at Alhambra, Calif., on meat inspection, in the employ of the Los Angeles County Live Stock Department.

Dr. A. J. Erickson (Chi. '11), formerly of Toulon, Ill., is now engaged in tuberculosis eradication work for the Illinois State Department of Agriculture and is stationed at Geneseo, Ill. Address: 210 W. 2nd St.

Dr. Alex. T. McIntyre (Ont. '12), of Brown City, Mich., was a patient in Harper Hospital, Detroit, during May. Dr. McIntyre has been suffering from gall-stones for some time. Mrs. McIntyre was a hospital patient at the same time, on account of stomach trouble.

Dr. Kenneth Ross (Ont. '27), who has been on the staff of Patterson's Veterinary Hospital, Detroit, Mich., for the past three years, severed his connection with the institution on May 1, and has entered practice on his own account at 13330 Gratiot Ave., Detroit.

Dr. H. A. Gould (Chi. '15), formerly associated with Dr. E. L. Quitman (Chi. '91), of Chicago, Ill., and Dr. T. H. Agnew (Ont. '96), of Pasadena and Beverly Hills, Calif., has joined the staff of the Hollywood Cat and Dog Hospital at Hollywood, Calif., owned by Dr. R. H. Fosbinder (Chi. '10).

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